

REPORT

ON THE



CULTIVATION OF, AND TRADE IN, JUTE IN BENGAL,

AND ON

INDIAN FIBRES

AVAILABLE FOR

THE MANUFACTURE OF PAPER.

HEM CHUNDER KERR,

Deputy Magistrate, on special duty.

Calcutta:

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RESOLUTION.
AGRICULTURAL DEPARTMENT.

Calcutta, the 30th March, 1874.

READ—

Report on the cultivation of, and trade in, Jute in Bengal and on Indian Fibres available for the manufacture of paper, by Hemchunder Ker, Deputy Magistrate, on special duty.

THE Lieutenant-Governor looks upon this report as a most valuable one, and has no doubt that it will be so regarded by all who are interested in the production of the fibre. The report is minute and exhaustive, teeming with information on every point connected with the cultivation and uses of the plant, and the best thanks of the Lieutenant-Governor are due to Mr. Hemchunder Ker for the care, the elaboration, and the ability with which it is marked. His Honor greatly laments the death of Mr. Hemchunder's colleague in the Commission, the late Mr. Anstruther, whose seizure with acute illness while in the active and zealous performance of the duty which he had undertaken, and its rapid course and fatal termination, prevented the Government having the benefit of his inquiries in the shape of any notes, or records of his own. Mr. Hemchunder pays a just tribute to the assistance received by him from his colleague, and the Lieutenant-Governor regrets deeply the death of this gentleman, while employed in the public service.

As to the origin of the word jute, the Commission trace its introduction at the close of last century to Dr. Roxburgh, who, it is suggested with much probability, learned it from his Uriya *naillies* in the old Company's Botanical Garden at Seebpore. The words *jhout* and *jhut* are the common vernacular names of the fibre in the Cuttack, Pooree, Balasore and Midnapore districts, and as the old East India Company had extensive roperies and canvas manufactories on the sea-board of Orissa, there can be little doubt that the conjecture of the Commission as to the derivation of the word is well founded, and that the modern term *jute* is simply the Anglicized form of the Orissa *jhut* and the ancient Sanskrit *jhāt*.

As to the precise plant which yields the fibre, the Commission has ascertained beyond question that the jute of commerce is yielded indifferently from two distinct species of *Tiliaceæ*—the *Corchorus olitorius* and *Corchorus capsularis*. The leaves of both plants are extensively used as potherbs by the people. Regarded as vegetables, they are both known all over Bengal, in common with other species of the same order, by the general term *nálila*, but the Bengallee name of the two special plants regarded as fibre-producers is *pát*. In current Bengali *pát* invariably means either the jute fibre or the plant that produces it, but the term in more general use in Eastern Bengal for the fibre of both species seems to be *kushla*. It may therefore be regarded as settled that we now know the precise plants which yield the fibre, and the names by which they are known. The plants are extremely alike in appearance, leaf, color, and growth, differing only in the formation of their seeds-pods, which last are totally different and most unlike one another; those of the *C. capsularis* being short globular and wrinkled, while those of *C. olitorius* are about the thickness of a quill and about two inches long. Both plants are annual, and grow from five to ten feet high, with a stalk about the thickness of a man's finger, seldom branching except near the top. The leaves, which are of a light green colour and serrated, are four to five inches long and taper to a point. Several other species of the same plant are said to yield *jute*, but are not cultivated for their fibre, the species already named alone yielding the real jute. This fact was very clearly established in the course of the Commission's investigation by a series of experiments in the Royal Botanical Gardens with seeds obtained from all the districts in which the fibre is grown. The result showed beyond doubt that the real *jute* of commerce is the produce of one or other of the two plants named, and of them

only. In Lower Bengal, generally, the two species appear to be grown differently; in the central and some of the eastern districts the *C. capsularis* largely predominates, while in the neighbourhood of Calcutta it is the *C. olitorius* that is chiefly cultivated, the well-known Lukhipore jute of Hooghly and the 24-Pergunnahs, known also as *desi* jute, being the produce of this latter species.

Although the plant has been cultivated from time immemorial in the Lower Provinces, its export is a modern industry altogether; but the fibre has been cultivated largely for home consumption and for the manufacture of gunny from a very remote period. One or other of the two plants has been found in no less than forty-seven out of the fifty-eight districts of the Presidency. The attention of the Commission was especially directed by the Government to the importance of ascertaining what description of soil was most favorable to the growth of the fibre. The evidence collected upon this point is conflicting, but the thanks of the Lieutenant-Governor are due to the Commission for the effort made to obtain it. The soil requires to be subjected to systematic and extensive analysis before we can arrive at any absolute conclusion upon the point; but the Lieutenant-Governor observes that it appears to thrive on almost every description of soil except laterite. A light sandy soil also is not well suited to the plant, which seems most to flourish in a hot, damp atmosphere, with a heavy rainfall and rich alluvial soil. The seasons of sowing and growth appear generally to be the same as those for the early rice crop of Bengal. The oftener and more thoroughly the land is ploughed, and the more manure that can be given it, the better. The seed is sown broadcast from the middle or end of March to the beginning of June, and the plant is cut from the middle of August to the middle of October, and in some of the districts earlier. The Commission direct prominent attention to the extreme carelessness of the cultivators in the selection of the seed. In most instances a corner of the field, or a few stunted wayside plants are left to mature the seed, not the slightest attempt being made to select it; and if in these circumstances a real deterioration of the plant had taken place, a fact which the Lieutenant-Governor is glad to see the Commission doubt, little wonder need be expressed. Neither selection nor change of seed seem ever to be resorted to, and if the attention of Government is ever directed to improving the cultivation of the plant, the first step must be a reform in this fundamental point of good husbandry.

The districts which chiefly yield the fibre, grouped geographically, and the area under cultivation in 1872, are according to the report as follows, but the figures are approximate only:—

<i>Northern Bengal.</i>				Acres.
Pubna	...	...	...	122,000
Dinagpore	...	...	...	117,000
Rangpore	...	...	...	100,000
Bogra	...	...	...	46,000
Bajshuhye	...	...	...	14,000
Purneah	...	...	...	75,000
Jalpigoree	...	...	...	50,000
Gualpara	...	...	...	15,000
Cooch Behar	...	...	...	25,000
				<hr/>
				564,000

<i>Eastern Districts.</i>				
Mymensingh	...	...	...	84,000
Tipperah	...	...	...	78,000
Dacca	...	...	...	40,000
Furzedpore	...	...	...	16,000
Backergunge	...	...	...	11,000
				<hr/>
				229,000

<i>Districts round Calcutta.</i>				
24-Pergunnahs	...	...	...	47,000
Hooghly	...	...	...	32,000
				<hr/>
				79,000
19 other Districts together	...	...	...	49,000
				<hr/>
Total	...	...	...	921,000

This was the acreage under jute in the great producing season of 1872. The area is said to have been no more than 517,000 acres in 1873. The northern and eastern districts may almost be said to engross the cultivation, showing a total area of 800,000 acres under the plant in 1872 against 125,000 only in the rest of the Presidency. The devotion of so large an area to this export in the Rajshahy Division in particular is an economic fact of considerable interest at the present moment, and the Lieutenant-Governor notices the fear expressed by the Commission that the cultivation has trenchd injuriously upon land which was formerly devoted to food-grains; the opinion of the Commission being that at least two-thirds of the area under jute are lands that have been alienated from food-grains.

The suggestions of the Commission for the improvement of the staple are confined to the selection of the seed, the observance of a more careful rotation in growing the crop, and to the improvement of the processes of cutting and steeping the fibre; and the Lieutenant-Governor commends this part of the report to the attention of all who are interested in the trade.

The influence of the cultivation on the condition of the people appears to have been decidedly good. The testimony is uniform that it has enriched the cultivator, while the deleterious effects of the manufacture upon the health of the people seem to be very problematic.

As to an alleged deterioration in the staple, the Lieutenant-Governor has little doubt that the Commission rightly attribute this belief to the fact that the high prices which have prevailed of late years have stimulated the production of large quantities of inferior jute or badly prepared jute. It is not that there is less good jute produced than formerly, but that a larger proportion of inferior fibre, grown on any and every soil, has come into the market under the stimulus of prices; and still more that when the quantity grown is large, the labor and care devoted to its preparation are comparatively small. The Commission record their conviction that "there is nothing to show that there has been any deterioration *in se* in the character of the jute or any general falling off in the quality of the fibre."

The local manufactures of the fibre into cordage and twine, and into gunny-cloth and gunny-bags, are too well known to need remark; but the Commission have usefully reviewed the purposes to which the fibre is turned in the several districts in which it grows. It is used for paper-making in Maldah, Rungpore, Dacca, Mymensingh, Backergunge, Noakholly, and Cuttack.

The Lieutenant-Governor desires to thank the Commission for the interesting supplement they have given to the report on the various fibres used for the manufacture of paper in Bengal. This part of the report will be read with interest, His Honor believes, by the Government of India, at whose request it has been prepared, and he commends it to the notice of the mercantile community of Calcutta.

By order of the Lieutenant-Governor of Bengal.

H. L. DAMPIER,

Secy. to the Govt. of Bengal.

No.

COPY forwarded to

By order of the Lieutenant-Governor of Bengal.

R. KNIGHT,

Asst. Secy. to the Govt. of Bengal.

CALCUTTA,

The 30th March, 1874.

A. St. L. B.

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- Resolution No. 2 of 6th February, appointing Baboo Hen Chunder Kerr and Mr H. Anstruther to form a Jute Commission for the purpose of carrying out the enquiry contemplated in the former resolution

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ERRATA.

Pago	i	line	10	for	Zeylanica	read	Zeylanica.
"	"	"	22	"	Sesbania	"	Sesbania.
"	"	"	23	"	Crotalaria	"	Crotalaria.
"	"	"	7	"	Capsularia	"	Capsularia.
"	ii	"	10	"	Chuttee	"	Chuttee.
"	"	"	62	"	Banipore	"	Banipore.
"	"	"	67	"	Goulparah	"	Goulparah.
"	1	"	19	"	Sank	"	Sank.
"	10	"	60	"	Medical	"	Medicinal.
"	18	"	28	"	(५४ chat)	"	Chat (५४).
"	"	"	44	"	Jhut-jhutá	"	Jhut = Jhutá.
"	19	"	26	"	Barleria	"	Barleria.
"	"	"	27	"	Jata and Jútá	"	Jatá and Jútá.
"	30	"	2	"	Plant antidote	"	Plant:—antidote.
"	44	"	23	"	Aerial	"	Aerial.
"	"	"	41	"	Kúchúri	"	Kachúri.
"	46	"	29	"	Will not	"	Would not.
"	47	"	22	"	Imminent	"	Eminent.
"	51	"	26	"	Are now	"	Is now.
"	"	"	27	"	They will	"	It will.
"	"	"	59	"	Ryots	"	Ryot.
"	52	"	20	"	1862-63, 12,623,110	"	1862-63 to 12,623,110.
"	55	"	34	"	Small prices fit	"	Small and fit.
"	66	"	17	"	Foreign	"	Foreign.
"	83	"	39	"	Have now been	"	Have been.
"	89	"	25	"	Omit the words "spoken of" in Se-hsangor."		
"	91	"	16	"	Calcuttensis	read	Calcuttensis.
"	106	"	25	"	Are offered	"	Be offered.
"	107	"	4	"	Mills, 1	"	Mills, 1.

APPENDIX B.—Statement No. 46, p. xxix, second col., line 8, for "The quality has been gradually," read "The quality has not been gradually."

FROM BABOO HEM CHUNDER KERR,

On Special Duty to inquire into the Production of, and Trade in, Jute,

TO THE SECRETARY TO THE GOVERNMENT OF BENGAL,

IN THE STATISTICAL DEPARTMENT.

Dated Calcutta, the 18th December 1873.

SIR,

I HAVE the honor to submit the following report on the production of, and trade in, jute in the provinces of Bengal, Behar, Orissa, and Assam, with special reference to the points noted in the resolution of His Honor the Lieutenant-Governor of Bengal, dated the 4th February 1873 (Appendix A., p. i).

2. By a resolution dated the 5th February 1873 (Appendix A., p. ii), the inquiry into the subject was referred to a Commission consisting of Mr. Hamilton Anstruther and myself. But before the resolution had been officially communicated to us, we had already entered upon our duties on the 30th January under demi-official instructions received through His Honor's Private Secretary.

3. I have to deplore the lamentable death, in the midst of our labours, of my able and efficient colleague Mr. Hamilton Anstruther. His illness was brought on by his exertions in the labours of this Commission, and he sunk under it in September last. I feel deeply his loss, as it deprived me of a colleague from whose co-operation and advice I had hoped to benefit largely in the completion of the inquiry with which we had been entrusted. He left no notes or memoranda of his observations. I have been thus compelled to prepare this report without my esteemed colleague's assistance, and must crave the indulgence of Government for any shortcomings which that assistance might have supplied.

4. Before proceeding to the mofussil to prosecute local inquiries, we employed ourselves for a short time in collecting such information regarding jute as was available either in published works, or in official records, as well as regarding the trade in that fibre, and the alleged deterioration in its quality. We also circulated among divisional and district officers, as also among private gentlemen, traders and brokers in and about Calcutta, a set of questions on the subject, so framed as to elicit all the information that could be easily collected.

5. On the 19th April last we left the presidency on a tour in the jute-growing districts, and the memorandum below shows in what order, and at what times, we visited the different places in which we made our inquiries, whether jointly or singly :—

Baraset, 24-Pergunnahs...	...	22nd March 1873, jointly.
Barripore	...	3rd April " "
Ooterparah, Hooghly	...	7th " " "
Sindoori, Jessore	...	9th " " "
Burdwan district	...	13th " " H. C. Kerr.

Dacca district	...	...	21st to 2nd May, jointly.
Mymensing district	...	...	3rd to 12th " "
Serajunge, Pubna	...	...	26th to 24th " "
Kaligunge, Rungpore	...	...	19th to 23rd " H. C. Kerr.
Chilmari	...	...	29th to 31st " "
Goalpara district	...	...	2nd to 7th June, jointly.
Rungpore station	...	...	8th to 17th June, "
The stations on the Teesta	...	...	18th to 22nd June, H. C. Kerr.
Backergunge and Furreedpore	...	...	10th to 28th August "

6. The inquiries we instituted in these places embraced—*firstly*, a minute inspection of jute-fields, a comparison of plants in different stages of growth, and an ascertainment of the causes which aid or check the development of the fibre; and, *secondly*, a careful examination of persons engaged in cultivating, or dealing in, jute, with special reference to the points on which His Honor desires information.

7. On the 10th April, and again on the 10th May last, we submitted for His Honor's information brief reports on the prospects of the jute crops and the probable quantity of produce during 1873, regarding which the mercantile community of Calcutta were at the time naturally very anxious.

8. On our temporary return to the presidency on the 30th June last, Mr. Anstruther was incapacitated by serious illness for further exertions in the duty he had so earnestly taken up, and ceased to act on the Commission.

9. With a view to separate the true jute from various other kinds of fibres commonly used, or known, in the country, we early directed our attention to collecting specimens of all such as were available in Bengal. Our researches resulted in the collection of the products of thirteen different species of plants, belonging to eight different natural orders, as follow:—

Malvaceæ.

1. *Hibiscus mutabilis.*
2. " *cannabinus.*
3. " *strictus.*
4. *Abelmoschus esculentus.*

Amaryllidaceæ.

5. *Agave americana.*

Liliaceæ.

6. *Sanseveira zeylanica.*

Asclepiadaceæ.

7. *Calotropis gigantea.*

Urticaceæ.

8. *Urtica tenacissima.*

Leguminosæ.

9. *Sesbania aculeata.*
10. *Crotalaria juncea.*

Cannabinaceæ.

11. *Cannabis sativa.*

Tiliaceæ.

12. *Corchorus olitorius.*
13. " *capsularis.*

10. All the four *Hibisci* yield fibres from their bark, but the first on the list is rarely cultivated for that purpose. Its bright, large, attractive flowers, which have the peculiar property of changing their colour from white to crimson in the course of the day, make it most welcome as an ornamental plant in gardens.

Hibiscus mutabilis.

11. The *H. strictus* is also very little cultivated for its fibre. Dr. Roxburgh, however, says:—"Like many other of the malvaceous tribe, the bark of this species abounds in flaxen fibres; but in none have I found so large a quantity, equally beautiful, long, glossy, white, fine and strong as in this. To these promising qualities may be added the luxuriant growth and habit of the plant, rendering it an object deserving of every care and attention, at least until the real worth of the material is fairly ascertained."

Hibiscus strictus.

12. The *H. cannabinus* is common in almost every part of India. Its native names are *Ambaree*, Western India and Central Provinces; *Palangoo*, Madras; *Pootey numjee*, Coimbatore; *Gongkura*, Telingas; *Mestá pát*, Bengal; *Sunnee*, Saharunpore; *Wilaice* (or foreign) *sun*, Muttra; *Deekance hemp*, Bombay; *Ambya pát*, Purneah; *Kudrum*, Behar; *Gyal*, Dukheen; *Sunn kokla*, Punjab; *Patwá*, Oudh; and *Put sunn*, Azinghur and Benares. Dr. Wilson, on the authority of a modern lexicographer, supposes the Sanskrit name of the plant to be *Nálíká*.

Hibiscus cannabinus.

13. In Bengal it is extensively cultivated in Furreedpore and Backergunge, and in limited quantities in other districts. Its fibre is bright and glossy, but coarse and harsh to the touch, and on the whole inferior to true jute. The following is Dr. Roxburgh's description of this useful plant:—"It is much cultivated by the natives. Its leaves are in general used as an esculent vegetable, and taste something like sorrel. The bark is replete with strong and tolerably soft fibres, and is employed as a substitute for hemp, to which it is much inferior both in strength and durability. The usual time of cultivation is the cold season, though it will thrive pretty well at all times of the year if it has sufficient moisture. A rich loose soil suits it best. The seeds are sown about as thick as hemp, but generally mixed with some sort of small or dry grain, rendering it necessary to be sown very thin that the other crops (which is one of those grains that does not grow nearly so high) may not be too much shaded. It requires about three months from the time it is sown before it is fit to be pulled up for watering, which operation, with the subsequent dressing, is similar to that hereafter described for *Crotalaria juncea*."—(Royle on Fibrous Plants, p. 255). In the Purneah district it is sown in separate fields by itself, as is the case in some of the central and eastern districts; but in Behar and the North-West it is either sown along with *arhar*, or on the borders of fields sown with *kodo* and other crops. The fibre of this plant is sold along with jute, and as jute. It is employed in Bengal for all the purposes of jute, and also for making fishing nets and paper.

14. The *Abelmoschus esculentus* is cultivated largely all over India for its pods, which are eaten as a kitchen vegetable, both by Europeans and Natives; it is also used in the North-Western Provinces for clarifying sugar. Its fibre is harsh and brittle, for which reason it is not manufactured to any very large extent in Bengal; but in Mymensing and Dacca it is occasionally prepared for adulteration with jute. The defect in the fibre, it would seem, is due to the process adopted in making it, for in the Southern Presidency it is so manufactured as to retain considerable strength and pliancy, well suited to the manufacture of rope, string, gunny-bags and paper, and bearing considerable resemblance to the true hemp of Europe.—(Madras Selections, No. XXIII, p. 152). The quantity prepared annually is large, and there is an exportation which amounted in the year 1853-54 to 6,112 cwt., valued at Rs. 27,113.

Its native names are *Dhenros*, Bengal; *Vendee*, Madras; *Ram-tarái*, North-Western Provinces.

15. The *Agave americana*, or American aloe, is found wild in many parts of India, and is not up often cultivated as a fence for gardens, for which its prickly character and dense growth render it very suitable. Occasionally it is employed in the manufacture of fibre, but not to any extent, and never for trade. Its fibre, as ordinarily prepared, is harsh and brittle, though its colour is good. Under proper

Agave americana.

management it would probably yield a stronger and better staple. It is well adapted to the manufacture of paper. Another species of aloe, *A. perfoliata* of Dr. Hunter, and *A. indica* of Royle, with red flowers, yields a better product. According to Dr. Royle its "fibre is white in colour, fine in quality, with sufficient tenacity for textile fabrics, and readily takes colours, as shown by the orange, red, and crimson coloured specimens sent by Dr. Hunter to England. The fibres are about two feet in length, and have considerable strength. A bundle of the fibres bore 160lb, when a similar one of Petersburg hemp broke with the same weight."—(Fibrous Plants, p. 51).

It is not mentioned as one of the fibre-yielding plants of Bombay; but it grows in Madras, where its fibre was employed for several years, instead of English hemp, in the arsenal. In the Punjab it grows well as a hedge plant, but its fibre has not yet been utilized there on any large scale.

16. The *Sanseveira zeylanica* is an aloe like the last, and has been known and prized in India from remote antiquity under the name of *mūrvā* or *mūrvī*. Its principal use in ancient times was for bow-strings, whence they have the derivative name *māurvi*. Manu recommends it as the most appropriate material for the girdle or zone of the military class or Kshatriyas. It is at present known under the vernacular names of *murgāvi*, *murgā*, and *mārvūl*, and is "used for ropes, twine, thread, bow-strings and cord." It is also "considered valuable for the manufacture of paper at Trichinopoly" (Drury). It grows wild on the coast of Guinea and other parts of Africa, along the Bay of Bengal, in the Indian Peninsula, on the Dindigal Hills, in Java, and on the coast of China. Dr. Buchanan found this plant employed for making cordage at Bangalore; and bow-strings are still made of its fibre in the Sircars and along the coasts of Bengal. In the interior of Bengal it is equally common and wild, but not so largely used for its fibre. The strength of its fibres has been tried by experiments noticed in detail in the Journal of the Agri-Horticultural Society of India (III, p. 23), and found sufficient to fit them for lawwers and cables; while their fineness and tenacity are attested by their being used by jewellers for thread to string pearls. The Rev. J. Garrow, it appears from a notice quoted by Dr. Royle, got some beautiful fibres prepared as soft and thin as human hair, and had some cloth made of them by native weavers, which he declares to be "as fine as he ever beheld." One of its Sanskrit synonyms is "*guna*," which also means a string. In its vernacular form, *gūn*, it is applied to tow-lines. The Sanskrit *gou*, meaning "a sack," is the root of the Bengali word *gūn*, "sack-cloth," and unmistakably also of the Indo-English *gunny-cloth* and *gunny-bag*, all derived from *guna*, a string, implying a cloth made of strings. In Telegu the word *gōṇi* is preserved in its integrity, and in Tamil its first letter is modified, changing it thereby into *kōnī*. The Persian *kundu*, *kunduj*, *kunu* or *gunu*, all implying sacks, are also most probably modifications of the Sanskrit word.

17. The *Calotropis gigantea* (*ākanda*, commonly called *mudār*, Sanskrit, *arka*) is a valuable medicinal plant, and is largely used in Indian pharmacy. It grows wild on arid wastes, rubbish mounds, and other neglected places, whence it is collected for its milky juice, seeds, and flossy seed covering. The first two products are used in medicine, the last for the decoration of toys. The fibre prepared from its bark is of a superior quality, being from its thinness, tenacity, brightness and softness, fit for a variety of economic purposes. It is in appearance and strength closely similar to English flax, though the fibres are somewhat thinner. In Madras, where it also grows wild, it is selected by the natives as the strongest material for bow-strings, Gins, and tiger-traps; but in Bengal it is never manufactured for trade. In Bombay it is known as a fibre-yielding plant, but does not appear to be cultivated to any extent.

18. Although only recently brought to prominent notice, the *Rhea* is by far the most valuable fibre-yielding plant produced in India, and is certain ere long to contribute a leading staple for the export trade of the country. It has been cultivated in

Sanseveira zeylanica.

Calotropis gigantea.

Urtica tenacissima.

small quantities from time immemorial in Assam, and also in the districts of Rungpore, Dinagopore, and Sylhet. It is familiar to the people as the source of a strong fibre for fishing nets. Two varieties are known to them: the *Dome rhea*, or the cultivated variety, reared by a class of fishermen (Domes) for net and tackle, and the *Don rhea*, or the wild kind. Botanically they are believed to be the same. The plant is common almost everywhere in Burmah, and the Shans cultivate it for its fibre, with which they manufacture a kind of linen. The Singpos and Dhonnas of the north-eastern frontier also prepare a kind of cloth with it. They know it by the name of *Pán*. In the Malaya peninsula, and on the island of Java, its name is *Ramee*,* and in Sumatra *Caloce*. The Nepales call it *Leepceah*, and the Chinese *Chu-ma* or *Mu*, from which they manufacture their celebrated grass-cloth. In Dinagopore, Rungpore, and Goalpara, its vernacular name is *Kankhura*.

19. Attention was first drawn to the fibre of this plant as a staple worthy

Early notices.

of exportation at the beginning of this century, and Dr. Roxburgh obtained from Bencoolen a few cuttings for propagation in the Hon'ble Company's Botanical Garden at Seebpore, in the year 1803. The cuttings readily took root, and multiplied freely; but it does not appear that a sufficient supply of fibre was obtained by the Doctor for despatch to England. In 1811 the yield of fibre in the Botanical Garden was large enough to enable Dr. Buchanan to send three bales of it to the Court of Directors. This sample was very highly spoken of, and a thread spun of it was reported to have borne a weight of 252lb, "whereas the weight required to be borne by Russian hemp of the same size in His Majesty's Dockyard was only 84lb." The Society of Arts of the time marked their sense of the value of this fibre by awarding a medal to Captain J. Cotton for introducing it to the notice of manufacturers in England. There was thus a good prospect opened for the cultivation of the plant and the manufacture of its fibre being taken up on a large scale; but somehow or other the subject was allowed to drop until the middle of this century, when the discovery of the Assamese wild *Rhea* by Captain Hannay again drew public attention to it. Captain Hannay, Colonel Jenkins, and Colonel Dalton, repeatedly brought it to the notice of the Agri-Horticultural Society of India, and several large samples were sent by different individuals to the Universal Exhibition of 1851, where they met with very honorable mention. Dr. Wallich, after carefully examining these samples, addressed a note to Mr. William Sangster of London, in which he said:—"The *Rhea* fibre you showed me is indeed a vast achievement. I am entitled to speak decisively in this matter, because I utterly failed in producing the article, as did one far greater than me, namely, the celebrated Dr. Roxburgh. So much more credit is due to Colonel Jenkins and to Major Hannay for their complete success."

20. In 1853 Colonel (then Captain) E. T. Dalton forwarded to the

Encouragement to its cultivation.

Commissioner of Assam fifteen bales of *Rhea* prepared by Captain Hannay, and suggested the propriety of Government buying up at a premium as much of the *Rhea* fibre as could be had, and to do so for three or four years successively, to encourage the people to betake themselves to its cultivation on a large scale. This recommendation was, however, not adopted; but attention was directed to promote the cultivation of the plant at Saharanpore, Tenasserim, and other places. The efforts made in this direction proved everywhere successful, and an attempt made by one Mr. Roehl to introduce the plant into the southern states of North America in 1867 was pronounced to be eminently satisfactory. The plant in fact takes to any kind of soil, and, with proper irrigation and manuring, thrives well. In the damp-warm climate of Assam it grows so rapidly that five cuttings a year may be readily taken without any irrigation or manure—the average result being twelve maunds the acre. In the hot dry atmosphere of Saharanpore three cuttings have been very successfully taken without any injury to the parent stems.

* This name has been adopted in America, where a machine for dressing it has lately been constructed.

21. Everywhere, however, a serious difficulty was met with in separating the fibre from the stem with ease and economy.

Government prize for a cleaning mill.

To obviate this the Government of India recorded a resolution in 1869 offering two prizes—one of £5,000 and the other of £2,000—for a suitable machinery or process for separating the fibre from the bark and stem at a cheap cost, and laying down the conditions which the machinery or process was to fulfil. Orders were at the same time issued to extend the cultivation of the *Rhea* plant in the Saharunpore gardens, and in Dehra Doon. The advertisement which was issued in the following year in pursuance of the above resolution limited the prize to a single premium of £5,000. One year from the date of the advertisement was allowed for the preparation of the machines, and their transport to the locality where they would be tried, with the proviso that in the event of no invention of sufficient merit being received within the period fixed, the Government would continue to allow machines to be tendered for trial till the end of two years from that date. In 1872 thirty-two machines were tendered, and in the month of August of that year Colonel Hyde was deputed to Saharunpore to examine and report on them; but at the trial only one mill was submitted, which had been designed and patented by Mr. J. Greig, junior, of Edinburgh, and it was pronounced to be unequal to the task proposed for it. In consideration, however, of the novelty of the subject, the trouble undergone by the patentee, and some points of excellence in the design of the mill, Colonel Hyde recommended the grant of Rs. 15,000 as a bonus to the patentee, and this was sanctioned by Government letter No. 16, dated 13th January 1873, to the address of Colonel H. Hyde.

No competitor has since come forward, and the want of a proper mill for the easy and economic working of the fibre still continues to be felt as a great impediment to the full development of this branch of industry. I find from some papers published in the Supplement to the *Gazette of India* (1870, p. 477) that a machine for the separation of this fibre has been invented by Mr. Roezl which is claimed as a success.

The bazar price of the fibre prepared according to the native method varies from six annas to one rupee the seer.

22. Of the two leguminous plants named in paragraph 9, the first,

Sesbania aculeata.

Sesbania aculeata (*dhonchia*), is of little value as a fibre-producing species. It is common in almost every part of India. In Bengal it is very extensively cultivated for its sticks, which are used for setting fire to funeral pyres, as props for valuable creepers like the garden pea, and as fuel. Its fibre is employed in the manufacture of cordage of a very inferior quality. The fibre, as usually prepared, is very harsh, but strong. It appears from experiments made in the Arsenal of Fort William and by private persons, that when properly treated its quality and strength improve greatly; and Dr. Royle quotes a report which says—"The *dhonchee* is very suitable for ropes, and if it will take in tar, is of considerable value. It would probably fetch from £30 to £35 a ton, and after being introduced and known, perhaps £5 more. It was also valued by others at £35 in 1853." It is never used to adulterate jute.

23. The next species, however, is an important one. Like the preceding,

Crotalaria juncea.

it is common in every part of India, and is highly esteemed as a valuable commercial article. Along with the *Hibiscus cannabinus* it yields in the North-Western Provinces the most important fibre for cordage and twine, for domestic use,—in fact it there occupies the place of jute in Bengal.

24. Its ordinary native name in Bengal is *Sunn*; but as that name is also

Vernacular names.

applied to the fibrous product of the hemp plant, cultivators in some districts distinguish it by adding to the word some characteristic epithet or other: thus, the people of Coomáráhálí call it *Boggy sunn* and *Phul sunn*; those of Cuttack, *Chun-pát*; those of Jessore, *Bhágá sunn*; those of Maldah, *Báddál sunn*; and those of Cachar, *Ausa* and *Sailá*. In the North-Western Provinces people call it simply *Sunn*, and in the Punjab *Sunni*;

in Madras *Wakhoo*, *Janoomoo*, *Vakhoonar*, *Jahapam nar*, &c.; in Bombay *Tag*; in Burmah *Pan* and *Paik-hsan*. Its botanical characters have been given in the Appendix (i). (p. lxxxviii).

25. Frequent mention of the *sunm* occurs in ancient Sanskrit works under the name of *sana* and its other synonyms, and everywhere its value as a material for strong ropes and twine is highly extolled. There is a curious passage, however, in the *Vishnu Purāna*, purporting to be a prophecy of the deteriorating character of the *Kaliyuga* or iron-age, which means that in that age "the garments of men will be like *sani* (*sunm*-cloth, i.e., sack-cloth), tall trees like *sami* (a species of *Acacia*), and castes like the *sudra*."

In the *Ain-i-Akbari* the plant is described as bearing yellow flowers in the spring, though it now flowers in the rainy and cold seasons, and in speaking of hemp its author says: "One species bears a flower like the cotton shrub, and this is called in Hindustani *Sunpdt*. It makes very soft rope."—(Gladwin's *Ayeeen Akbari*, Vol. I, page 89).

The first notices of this fibre in European works are due to Rheede (*Hortus Malabaricus* V, IX, t. 26) and Ironside (*Philosophical Transactions* of London, LXIV, p. 99), and it is mentioned by Roxburgh in the early volumes of the *Transactions* of the Society of Arts. Detailed accounts of its culture, of the mode of preparing its fibres, and of the trade connected therewith in Madras, Bombay, and the North-Western Provinces, are given in Balfour's *Cyclopædia* of India and Royle's *Fibrous Plants* of India.

26. To indicate the value of the *sunm* fibre, I quote the following summary from Major Drury's work:—

Its uses.
"Samples of the *sunm* fibre were sent to the Great Exhibition, and also to the Madras Exhibition in 1855. On those forwarded to England Mr. Dickson reported that these fibres will at all times command a market (when properly prepared), at £45 to £50 a ton, for twine or common purposes; and when prepared in England with the patent liquid they become so soft, fine and white, as to bear comparison with flax, and to be superior to Russian flax for fine spinning. In the latter state it is valued at £80 a ton. In several parts of India the price varies from Re. 1 to Rs. 2-8 per maund. In Calcutta about Rs. 5 per maund, and the prices both in the latter place and Bombay are gradually increasing. By experiments made on the strength of the fibre, it broke at 407lb in one instance. Large quantities are shipped for the English market. What is known as Jubbulpore hemp is the produce of *C. lemmuifolia*, which, according to Wight, is a mere variety of *C. juncea*. Royle, however, and other botanists, think that it is a distinct plant; it is said to yield a very strong fibre, but probably not very different from the *sunm*."—(Royal Jury Reports—Report on Fibres of South India.)

27. It does not appear when this fibre was first sent to Europe as a commercial staple. In the manuscript proceedings of the Calcutta Board of Trade I find that in the years 1791-93 to 1795-96 several small invoices of *sunm* were sent to England, amounting altogether to 3,005 maunds. These attracted the attention of the English ministry of the time, who urged the Court of Directors to encourage the cultivation of the fibre to as large an extent as practicable. The Court of Directors accordingly sent out a despatch saying:—"Having taken into our serious consideration the subject of obtaining hemp from India, we are exceedingly anxious to promote the wishes of His Majesty's Ministers on that head, and therefore recommend the same to your particular attention."

It appears from this despatch that some experiments had previously been made in Calcutta with a view to test the value of *sunm* in the rigging of ships, and a report sent thereon for the information of the Court. Adverting to it the despatch says—"From Captain Barrow's report the ropes made of *sunm* at Calcutta and used in the running rigging of the *Earl Howe* for a trial, appear to have been equal in strength to the best English rope in the ship. You will collect and send us as great a quantity as possible of this article, prepared in the same manner as that in which the above-mentioned ropes were made."

On receipt of this despatch the Government, through the Board of Trade, directed the different commercial residents to advance money to the cultivators, and to get them to prepare the *sunu* after the European method.

The result of this impetus, however, did not evidently prove satisfactory, for the European method of dressing the fibre was nowhere naturalized, and the indigenous process everywhere held its ground. The fibres sent out during the first few years of this century were so inferior and adulterated, as also so dear, that the annual provision had to be greatly reduced in 1804. The Court of Directors were not satisfied with this course, and the cultivation and exportation had to be largely extended in the year 1808, from which date it has gone on steadily increasing, as is evident from the subjoined table—

Year.	Quantity in Maunds.	Value. Rs.
1st June 1808 to 31st May 1809	1,533	12,833
1st May 1818 to 30th April 1819	9,420	39,131
1st May 1828 to 30th April 1829	19,478	1,06,759

It must be noted, however, that the returns from which the above table has been compiled include “hemp, flax, and twine,” under one head, and some deduction has to be made for what is called flax, which probably was intended to indicate jute, for there is nothing to show that any true flax was ever exported.

28. Of the extent to which *sunu* is cultivated in Bengal there are no data available: I have failed also to obtain statistics of its cultivation in the North-Western Provinces.

But looking to its consumption for a variety of domestic purposes, for cordage and twine used in making nets, for the manufacture of canvass, for boat tackle, and for exportation, the quantity produced must be immense. In the Punjab the area devoted to its cultivation was—

In 1870-71	...	...	...	51,130 acres.
„ 1871-72	...	...	...	47,698 „
„ 1872-73	...	...	...	47,781 „

giving an average of 48,969 acres, which, at an average of eight maunds to the acre, would give an annual produce of 391,752 maunds. The figures noted in the margin* have been obtained from Oudh, which, at the rate afore-

said, would give 391,752 maunds for the annual produce of that province. It is to be noted that the fibre of the *Mestá pát* or *Hibiscus cannabinus* is there reckoned under the same category with the *sunu*, and it is not possible therefore to ascertain exactly the quantity of the fibre of the *Crotalaria juncea* (the true *sunu*) produced in that province. The bulk of the produce, however, is said to be derived from the *Crotalaria*.

29. The Sanskrit word *sana* is now used indifferently both for the produce of the *Crotalaria juncea* and that of the *Cannabis sativa*; it is impossible, therefore, always

to determine what is the plant referred to when the *sunu* is mentioned in Sanskrit works. The peculiar narcotic qualities, however, of the *Cannabis* have given it a variety of names, which, when used, leave no doubt as to the nature of the plant indicated. Some of these names are remarkably expressive; thus: 1st, *Māmlāni*, the wife of the *datura* apple *Māmla*, the hemp being somewhat milder than the *datura* in its narcotic effects. The Arabic word *Mutelaawin*, meaning unsteady, resembles this name closely in sound. 2nd, *Chupalá*, “the unsteady,” or “the causer of unsteadiness.” 3rd, *Bhangá*, “the wavy,” referring to the light, delicate, tremulous character of the plant as it stands in the field. In the Persian language *beng* means an inebriating drink, and is also applied to the hemp plant, and the question arises as to whether the Sanskrit *bhangá* is a corruption of the Persian *beng*, or *beng* is a corruption of the Sanskrit *bhangá*. In the former case it would follow that the name as well as the plant came to India from the North-West. 4th, *Jayá*, “the conquering,” or that which overcomes all painful feelings. 5th, *Vijayá*, “the all-conquering.” 6th, *Trailokya vijayá*, “the conqueror of the three regions of the universe.” 7th, *Harshini*, “the delighter.” 8th, *Indrabhujana*, “the food

of Indra," or the ambrosia of the chief of the gods. 9th, *Kāshmiri*, "the plant from Kashmir," indicating its original habitat on the hills. 10th, *Blurilā*, "the green one," &c.

30. In Europe the plant was imported from Central or Northern Asia, at a very early period, as it is mentioned by Herodotus and other ancient authors. In India its earliest mention occurs in the *Atharva Veda*, and in the well-known medical treatise *Susruta* a full account is given of its medicinal virtues, which has been dilated upon by later writers.

31. Of the history, botanical characters, and the various products and uses of this valuable and extensively cultivated plant, Dr. Royle, in his *Fibrous Plants of India*; Major Drury, in his *Useful Plants of India*; Dr. Balfour, in his *Cyclopædia of India*; and Sir William O'Shaughnessy, in his *Bengal Dispensary*, have given such detailed and elaborate accounts that it would be supererogatory to attempt another description; and these books are so easily accessible that an abstract of their descriptions is scarcely needed. The parts of the plant generally used by man are—*first*, the leaves, which yield the *siddhi* or *bang* of commerce, and are used in preparing a narcotic drink; *second*, the florets and seeds, which sell under the name of *gānjā*, and are smoked for the narcotic effects they produce; *third*, the resinous exudation from its flower-stalks, called *charras*, also used in smoking; *fourth*, the fibre of its bark, called *sunu*; and, *fifth*, the stem which is used as fuel.

32. When the fibre of hemp was first used in India does not appear. The earlier references to the plant have generally been made on account of its narcotic properties, either as a valuable medicine, or as a potent exhilarator, but not as a fibre-producer. A passage, however, occurs in the *Kausitaki Brāhmaṇa* of the *Rig Veda*, in which the word *bhāngi*, or the "Bhanga-made," is applied to a bedstead, and it suggests the idea that at that early time the fibre was used in making tapes for the tops of charpoys, for it is impossible to employ any other part of the plant in the fabrication of such furniture. This conjecture is the more probable as the word also occurs to indicate nets, in which case the fibre is obviously the material indicated. In some of the *Purāṇas* the word *bhāngaka*, or "Bhanga-made," is used to imply a kind of cloth, *i.e.*, hempen cloth, which is described to be very porous, as coarse hempen cloths of former times undoubtedly were. The name and the manufacture still exist among the people of the Himalayan hills, who call the light summer cloth they wear by the name of *bhangeli*, or the "Bhanga-made."

33. In European works the earliest notice of the hemp fibre occurs in Herodotus, who says "that the Thracians made garments of hemp, which so nearly resemble those made of flax as to require a skilful eye to distinguish them." The next notice occurs in the works of Athanasius, who, on the authority of an ancient writer, speaking of the ships of King Hiero of Syracuse which were superintended by Archimedes, thus notices hempen cords for ropes: "He provided cordage from Spain, and hemp and pitch from the river Rhone."

According to Potter, hemp, amongst others, was the material with which the Greeks made their cordage. Pliny dwells at length upon the description, culture, and uses of this plant, and says that the Romans manufactured a kind of cord from it, and had a knowledge of the medicinal uses of the root and of the juice of its bark. Tacitus also describes the sails of Roman ships as made of hemp.

34. In the *Ain-i-Akbari* there occurs the following description of the plant: "Hemp bears yellow flowers during the rains. Hemp grows in clusters like a rosegay. The leaves of the plant resemble those of the chenar tree, and of the bark is made rope."—(Vol. I, p. 89.) In another place it is stated "that large ropes are made of hemp."—(Vol. I, p. 79.)

35. Although thus widely known from very ancient times as a fibre-producer, the hemp plant is now nowhere cultivated on the plains of India for the sake of its fibre. In fact, the cultivation of the *Cannabis* for its fibre is limited almost exclusively to

Since when known.

History, botanical character, uses, &c.

Fibre, since when known in India.

Use in Europe.

Where cultivated for its fibre.

the valleys and the lower hills of the Himalayas, particularly on the Ghurwal and the Kumaon ranges. This is the more remarkable, as the plant is common and wild all over India, takes kindly to almost every kind of soil, and is cultivated largely for its narcotic products. In the provinces under the Lieutenant-Governorship of Bengal, the districts of Rajshahye and Bogra, and the province of Orissa, are the three places which yield the largest supply of *suddhi* and *gánjá*, but the people who cultivate the plant there never think of manufacturing any fibre from its bark. Doubtless the great value of the narcotic products makes the cultivators indifferent about the fibre, comparatively of so much less marketable value; still it is worthy of note that they should allow so large a number of plants annually to be destroyed, which by a little labour could be made to yield large supplies of so valuable a fibre.

36. In the year 1802 an attempt was made to introduce the culture of foreign hems in Bengal. Seeds were more than once sent out from England, but none of them germinated. Recourse was then had to seeds from the hills beyond Almorah, and the manufacture was carried on under the superintendence of European hemp-dressers at Rishra, and in Rohilkund, Casseepore, Maldah, Goruckpore, Mhow, and Azimgurh. In 1804 a farm was also established in Bareilly, and placed under the management of an experienced European officer. But the results everywhere were unsatisfactory, and on the 13th May 1808 the Calcutta Board of Trade abandoned the farms, saying: "With respect to hemp, the Board, judging from the experience of past years, have no expectations that the provision of that article in these provinces can ever become an object of national importance. The experiments which they have made at different places to introduce the cultivation of hemp have hitherto been attended with little success, whilst the small produce obtained has been extravagantly dear. The Board are now prosecuting further experiments in new districts. To the importation of hemp from the northern hills every encouragement has been, and will continue to be, given, and the supply from that quarter may be expected to increase."

An inquiry was instituted about the subject in the year 1871, and in reply the Board of Revenue intimated to Government that the *gánjá*-producing hemp was not cultivated for its fibre in any part of Bengal, except in small quantities in Singbloom and in isolated patches in Assam.

37. In the Punjab and Oudh the hemp plant grows wild, and is also cultivated to some extent for its narcotic products, but never for its fibre. In Kumaon it is grown largely for its fibre; but even there its cultivation "is now in no further advanced state than it was 30 years ago." "At that time," writes the Commissioner, "it was proved to be superior to Russian hemp, but the spasmodic attempts made to stimulate its production ceased long ago,—not because better hemp than Russian could not be produced in Kumaon at remunerative prices, but because English merchants and capitalists, I presume, were not sufficiently informed upon the subject; or if they were, they must have preferred getting their supplies landed at their doors from other sources, even if the product was inferior, to entering into the trouble of an alliance with the Páháree cultivator." In Bombay and Madras it is also grown, but not for its fibre.

38. Before proceeding to report on jute, I must refer to one other plant which deserves to be noticed in this place: it is the linseed or flax plant. In Arrian's *Periplus* of the Erythrean Sea, mention is made of a kind of fine cloth called *λέντια* (*lentia*), which from its name was evidently the product of the linseed plant, *Linum usitatissimum*. This was the *kshauma* (linen) of the Sanskrit writers, a cloth made of bark, of which frequent mention occurs in the Rámáyana and the Mahábhárata. This cloth used to be of very different qualities, sometimes fine and sometimes very coarse. The *lentia* above referred to was of a superior quality, and mistaken in Europe for fine muslin. In ancient Sanskrit it is often named as fit for vests for princesses, and modern expounders have been led to suppose that it was a silken cloth. Indeed in many medical dictionaries the word *kshauma* occurs as a

synonym for silk. *Kshumá*,* however, of which it is a derivative, is explained in Wilson's Sanskrit Dictionary, in accordance with ancient authorities, as the linseed plant, and this leaves no doubt as to the nature of the *kshauma* cloth. Among the many important synonyms of the word *kshumá* are *Unda*, *Haimavati*, *Atasi* (whence Bengal *tisi*), and *Musrina* (smooth, unctuous, whence Bengali *masiná*), all implying a plant. The words *kshauma* (*kshumá*-made), *Ammu* (*Umi*-made), and *Atasa* (*Atasi*-made), occur in various Sanskrit works of different ages. Manu directs mantles of woven *kshumá* to be worn by theological students of the military class. Out of the several significations of *kshauma* given by lexicographers, one is *Atasi-vastram* (flaxen cloth), another *Pattu-vastram* (pelt-made-cloth, the word being derived from the root *kshu*, to rustle), and a third *Sannu-vastram* (sann-cloth, one of the meanings of *kshumá* being *Snu*, the *Crot. juncea*). So recently as 300 years ago Kavi Kankana, in the Bengali Chandi, described a female punished by being obliged to dress in *kshauma* cloth and to tend goats. In this instance the cloth obviously was a coarse or sack cloth. In the Puranas references to the *kshauma* cloth are frequent, but not in such a way as to indicate its nature and character. In the *Ain-i-Akbari* a linen cap is described as part of the dress of a *Brahmachari* (Vol. II, p. 483). Anyhow it is abundantly evident that, as in other parts of the world, so in India, the true flax was known and manufactured from very early times, but that within the last two hundred years it has entirely lost its ground; and in Bengal, in the present day, a man would be laughed at who would say to the cultivators that the stalks of their well-known *tisi* is rich in fibre, and would by proper management yield a valuable product. Nor is this a matter for wonder, seeing that the linseed plant has so degenerated in Bengal that it seldom exceeds a cubit in height, and fibres prepared from it cannot but be of little value. Whether this degeneracy in the size of the plant is due to any deterioration in the soil and climate, or to defects in the mode of cultivation, I cannot ascertain. The practice in Bengal is to sow the seeds of the plant broadcast in very imperfectly ploughed fields, and so wide apart as to allow the plants to become bushy and dwarfish. In the North-Western Provinces the seeds are sown along with gram, safflower, wheat, &c., and the result becomes the same. In Oudh and Bombay it is likewise cultivated for its seeds, but never for its fibre.

39. In Bengal the Calcutta Board of Trade tried some experiments to improve the culture of flax in the early part of this century. Six Arabs, well experienced in the method of flax manufacture as practised in Egypt, were brought over from Bussorah. The place selected for experiment was a large field in the neighbourhood of Cassipoor, on the Himalaya; but it failed completely, and the Arab dressers had to be sent back at the close of 1807.

A successful series of experiments was tried by the Belfast Flax Company at Sealkote with foreign seeds sown in ridges. The result was highly satisfactory; the plants attained a good height, were rich in strong fibre, and altogether very superior to the Indian plant as ordinarily reared. A serious difficulty, however, stood in the way of the experimentalists; they could not grow the plant in sufficient number near their factory to make it remunerative to the zemindars. When grown at a distance in small quantities, the cost and delay involved in carrying the raw material to Sealkote were out of proportion to the sale proceeds. The plants also did not satisfy the cultivators, as the seeds produced under the European method of cultivation were not near so rich in oil as the ordinary country seeds. The experiment had therefore eventually to be given up.

In Madras "flax has been tried in several parts of the Presidency, both by Europeans and natives, and every inducement has been offered to the latter to cultivate it for seed by the temptation of high prices;" but it has not succeeded there as a fibre-yielding plant.

40. The *tisi* of Bengal sells at a high price for its oil, and the ryots would be shy of adopting any method of cultivation which would impair the yield of seed per acre, or the oleaginous component of the seed, unless it can be shown that the value

* The word has a strong resemblance to the Chinese *Chu-má*, which is applied to the *Urtica tridivisa* as well as to the true flax. It suggests an important inquiry as to the original habitat of the plant, which is believed by European botanists to be of Eastern origin.

of the fibre would more than compensate the loss caused by the reduced yield of seed and its deterioration in quality, or, which would be the same thing, such a method of cultivation may be adopted as would prevent the deterioration of the seed, and at the same time improve the growth of the plant so as to make it fit for the manufacture of flax.

41. The last two plants named in the list given in paragraph 9 have to be treated together, as the fibres they yield are exactly alike, and agriculturists and commercial men accept them to be the same. They belong to the order *Tiliaceæ*, or elm or linden tree group. The generic name is formed of two Greek words, *κορη*, "the pupil of the eye," and *κορεω*, "to cleanse:" the compound term was originally assigned to pimpinell or chickweed, because it was thought to purge the eyes of rheum. This chickweed is supposed to have been the *Corchorus olitorius*, or the bristly-leaved *Corchorus*. The Greeks used it as a potherb. It is still cultivated in the neighbourhood of Aleppo, and is described by travellers as eaten as a potherb in Egypt and Arabia, as well as in Palestine. Rawolf saw the Jews about Aleppo using its leaves as a potherb, whence the old name of the plant *Olus judaicum*, which has been rendered into *Mauve de Juif* in French, and *Jew's mallow* in English. It is supposed to be identical with the plant referred to in Job, chapter xxx, verse 4, under the name of Maluch (מלח).

42. Bochart is of opinion "that it means that particular shrub which the Greeks called *ἄλμος*, and the Romans *Halimus*, first, because the Syrians still call it *ἄλμος*; second, the Hebrew מלח and *ἄλμος* refer to the salt taste which the Arab writers attributed to this plant; third, because it is described to be the food of the wretched in Job, as cropped upon the shrub, which exactly agrees with what the Arab writers say of *Maluch* or *Halimus*, viz. that "they ate the tops of it." (Hebrew Lexicon).

43. Eadie, in his *Biblical Cyclopædia*, referring to the passage in Job where the word mallows occurs, says "that it is supposed to be the kind of bramble without thorns, the young leaves of which, resembling lettuce, are gathered and boiled by the poor as food." At Bagdad quantities of the vegetable are hawked about, while those who carry it cry "*Malochia*, *Malochia*," which differs little from the Hebrew word. Saline plants are found in the deserts of Arabia, and some are of opinion this is a general name for the class; others think that the real plant intended is a species of salt-wort, to which opinion the Greek version of the word gives some countenance.

44. Brown, in his *Biblical Dictionary*, speaking of the mallows, says: "there are about fifty or sixty kinds, and they are very useful in medicine. The leaves are useful in softening fomentations and cataplasms. A decoction of the root is a good drink in pleuritis, pneumonia, general inflammation of the kidneys, strangury, and all kinds of suppression of urine. Plutarch and Horace represent mallows as eaten by the poor, but perhaps the *Maluchi* are some kind of bramble whose tops and leaves are eaten by the poor people, and are still called *Maluchia* by the Moors." It is worthy of note that in the Appendix to Arrian's *Periplus of the Erythrian Sea*, containing a digest of the exports and imports of Alexandria, a kind of Indian cloth is named *Μολόχνα* (*Molochina*), which was of the colour of mallows, but whether the name was derived from the potherb *Malochia*, i.e., a cloth made of *pât* fibre, or from any Greek or Indian word, does not appear. The similitude of the name with *Malochia* would support the first inference. Paulino, however, explains the word to mean chintz: "*Tele finissime depinti e rechamente*." —(Vol. II, p. 58).

45. In India several species of this family of plants, including the two under notice, are also extensively used as potherbs. The common name in Bengal for the plant when used as a potherb is *Nálita* (নালিতা), a corruption of the Sanskrit *Nálitā* (नलीता), the different varieties or species being indicated by appropriate

prefixes, such as *ghi-nálitá*, *tít-nálitá*, *bil-nálitá*, &c. These words have also very frequently the suffix *sáka*, meaning a green, or potherb, to indicate the use made of the plants to which they are applied. Some of the plants yield leaves which are excessively bitter; others slightly so. The former, called *tiktá nálitá*,* according to the *Rájavalabha*, a modern medical treatise, is a specific against red eruptions, worms, and leprosy. The latter, *madhura*, cures cold, paralysis, phlegm, and wind; both of them are esteemed as good tonics. The middle and higher classes of the people take them, boiled with other vegetables in the form of soups, as stomachics or appetizers; the lower classes use them as articles of food.

46. When referred to as fibre-producers, these plants, however, are rarely called by any of the several names above alluded to, but by the generic term *pát*, obviously the vernacular form of the Sanskrit *patla*. The last word is derived from the root *pat*, "to surround," and is a very appropriate name for the fibres which surround the stem of the plant. But the word has been used to indicate cloth generally, as also turbans, bandages, ligature, and fillets, which are all intended to surround parts of the human body. From cloth generally to silk in particular, the transition was easy, and in some mediæval dictionaries *patla* is explained to be the name of woven silk. In that case, however, the root of the word was probably *pal*, "to shine;" but that would be alike applicable to the glossy fibres of silk and to *pát*. That the word was likewise used to indicate a plant is evident from the writings of commentators, as also from the *Subdamálá*, a lexicon of the middle ages, on the authority of which Professor Wilson explains the word in the first edition of his *Sanskrit Dictionary* as "a plant (*Corchorus olitorius*) from the fibres of the bark of which, called jute, a coarse sackcloth and cordage are prepared." This explanation has been almost generally accepted by subsequent lexicographers. The word occurs in the *Mohábhárata* for a fibre other than silk. In enumerating the various presents which the allies and tributaries of Yudhisthira brought to him on the occasion of his great coronation festival, the *Rájasuya*, the poet, in one verse, mentions certain articles which he calls "putta-produced" (*putta-jam*) and "insect-produced" (*kita-jam*). Here the "insect-produced" article was unquestionably silk, and the other, therefore, may be, without any violent presumption, assumed to be *pát*—at any rate something else than silken cloth. It should be noticed, however, that Dr. Royle, in his *Productive Resources of India* (page 116), cites the translation of the passage in question by one Terooner Candoo Mooteah, who reads the words *putta-jam* as *putta-kítá*, "the *putta* insect," which, if correct, would upset the above inference. The passage, however, was shown by Dr. Royle to Professor Wilson, who examined the Calcutta edition of the text, and a good manuscript in the India House Library, but failed to find the new reading; and as long as Mr. Mooteah's version is not borne out by the concurrent testimony of a number of authentic manuscripts, it may be set aside as of little import.

47. The word *putta* also occurs in Manu, and there it is qualified by the word *ansu*, "bright" or "lustrous," and stands close by the term *kausheya*, "cocoon-made," showing again that it was other than silk. And the late Dr. Goldstücker, in his edition of Wilson's *Sanskrit Dictionary*, very properly explained it to mean "a peculiar kind of fine cloth made of bark." It may be said that *Pát* is now-a-days ordinarily employed in the manufacture of sackcloth, canvas, and other coarse fabrics; and as the epithet cannot with propriety be applied to fine cloth, the "lustrous putta" (*ansu-putta*) of Manu must mean something else. This is possible; but the fact of the word *putta* having been for the last eight hundred years, since the date of the *Subdamálá*, associated with the *Corchorus*, would justify the assumption that even before that time it indicated the same plant. The *Rájatarangini* uses the word *putta-vaktá* for the nose-bag in which horses are fed with corn, and in which case the coarse canvas made of *pát* is all

* Dr. Royle supposes the bitter kind to be a variety of the *Corchorus olitorius*, but Dr. Roxburgh classes it as a different species under the name of *Corchorus fuscus*, and Dr. Lamarec under that of *C. acutangulus*.

but certainly indicated. Among the synonyms of *patta* there are also words which clearly imply a plant, and that the *Corchorus*. These are *Kakkhata patruka*, or "the rough-leaved"; *Rāja sana*, "the noble or big sunn," the plant being larger than the *Crotalaria juncea*; *Sani*, or "the sunn-like." The last two terms would suggest the inference that the *Crotalaria* was first known to the people, and that *pát* came to be familiar subsequently, and was accepted as a variety of the former. This is strengthened by the fact that *Sann* occurs in very ancient Sanskrit works, and the words *Chimi* and *Chimika* (probably a misspelling of *China*) also applied to the plant (*pát*), indicate its importation from China, a country where it is well known to grow wild, and also to be cultivated for the sake of its fibre. Dr. Roxburgh once obtained some seed from Canton of what was called "Chinese hemp," and produced a fine crop of it in the Honorable Company's Botanical Garden, but it turned out to be nothing but the *Corchorus*. It should be borne in mind, however, that objects brought from beyond the Himalaya frequently got the name of China in ancient Sanskrit writings, and the epithet *Káshmiri* or "*Káshmirian*" applied to the *pát* suggests the idea of its being a Himalayan product.

48. In current Bengali *pát* invariably means the fibre so called, as also the plant or plants which produce it, never silk; but when joined with a word implying cloth, as *páter kápad*, and in the Sanskrit form *patta vastra*, silken cloth is generally understood, and not linen. This use of the word for objects so very dissimilar has led to much confusion, and it is often very difficult to decide when an Indian author refers to the plant, and when to silk or cloth. The confusion, however, in this case is probably due partly to the same cause which has led the *kshauma* cloth, noticed in paragraph 38, to be mistaken for silk, and that is the similarity of the flax and the *pát* in colour, gloss, feel, and appearance with silk, and partly to the word *patta* being equivalent both to cloth of any kind as well as to the plant which produces the *pát* of commerce. It may be also added that the meaning "silk" assigned to *patta* is due to commentators and lexicographers of the last six or seven hundred years, whose knowledge of the materials used in the manufactures of ancient clothing was necessarily limited, and who did in many instances confound specific with generic names. The two unmistakable and certain names for silk are *kaustheya*, "cocoon-made," and *kitajam*, "insect-born," and of the two others frequently accepted to mean it, namely, *kshauma* and *patta*, the former has been indubitably identified with flax, the fibre of the *Linum usitatissimum*, and the latter, for the reasons aforesaid, may very reasonably be taken for *pát*.

49. One of the Bengali names of the plant, according to Dr. Birdwood, Mr. Piddington, and Dr. Balfour, is *bhungee* or *bhungee pát*, and according to Major Drury, *blunjee pát*; but these terms are not in use amongst the Bengalis. The first word *bhungee*, derived from the Sanskrit *bhangá* (Hindi, *bháng*, *Cannabis sativa*), has a curious resemblance to *gunja* or *ganja*, a name applied to the plant by Rumphius in his *Herbarium Amboinense*.

50. The most familiar Bengali name for the plant, but especially for the fibre of both the species as used in native commerce, is, next to *pát*, *koshtá*. It is in general use in Eastern Bengal. The word is derived from the Sanskrit *kosha*, "a sheath," the fibres forming a sheath for the stem of the plant—"the sheathed one."

51. The common Hindi name of the plant is *patuá* or *putuá sunn*. Major Drury calls it *Sinjinjanascha*, which evidently is a Madras name. It is called *Phetwoon* in Burma, where, specially about Rangoon, it grows wild. It is believed, however, that the species *Corchorus fuscus*, or the *títá* variety of the *C. capsularis*, grows in that country, affording a strong grey fibre (Royle, Balfour, and Roxburgh). Royle and Balfour say that it is called *isbund* in the North-Western Provinces of India; but Dr. Stewart, in his *Punjab Plants*, doubtfully describes the seeds of the *C. trilocularis* (Linn.) or *C. acutangularis* (Lam.) as sold in the bazar under this name, they being considered official, and given in rheumatism. In the '*Uffaz Udwigeh*, or the *Materia Medica* in

the Arabian, Persian, and Hindavy languages' by Nôired-deen Mahomed Abdulla Sherazi, *isbund* is, however, the name given to a species of mustard seed.

52. The common names used in Orissa for both the jute-yielding species of *Corchorus* are *Kowria* and *Nalita*, other names being *Naskarkani*, *Kotra*, *Kangra*, *Kanta*, *Tita*, *Beral*, and *Hanuman*; but whether they are mere local names of these plants or of their different varieties, or of other plants confounded with the jute-producing species, it is uncertain.

53. Dr. Royle calls it *Coch murda pat*, but gives no further description of it than supposing it to be a species of *Corchorus*. He also says that some jute sent to the Exhibition of 1851, from Rungpore, was distinguished by the names of *Suffed* (white) *Hemunt** *pât*, *Lal* (red) *Hemunt* *Pât*, and *Lol Petre* † *pât*.

54. Turning now from the plant to its fibre, the most popular name of it in Bengal and the North-Western Provinces is *pât*. The word is also more or less common in other parts of India, showing clearly that, whatever confusion Sanskrit lexicographers and commentators may have caused in the meaning of the Sanskrit *patla* by their diverse interpretations, the true import of the base has been very carefully preserved in its vernacular form. In Eastern Bengal it has, however, given way to *koshta* (vide para. 50), which is the prevailing name among agriculturists and dealers. It should be noted, however, that even there the word *pât* is likewise current, though confined among the general public unconnected with the cultivation of the plant and the manufacture of its fibre. *Sani*, *Râjasana*, and other terms, already cited above as names of the plant, are also applied to the fibre; but they are purely local, and confined to very small areas.

The following list comprises all the local vernacular names current in the different districts under the Lieutenant-Governorship of Bengal:—

Burdwan ..	{ Pat. Lal pat.	Nuddea ..	{ Koshta. Aman koshta. Desi koshta. Megnal koshta.
Bancoorah ..	{ Sada pat. Nalita.	.	{ Pat. Koshta. Megnal.
Beerbhloom ..	{ Botocari. Naskar kani. Koshta. Jhut. Kanta. Beral. Tita. Khetra. Hanuman.	Jessore ..	{ Sada pat. Desi pat. Bagi pat. Pat madhai. Arthonia borou pat. Deebri pat.
Hooghly ..	{ Koshta. Pat. Desee pat. Luckhipore pat. Chand pat. Lal bun pat. Teeta pat. Sada pat. Desi pat. Teeta pat. Bangilaul pat. Ghrita kanchan pat. Maisal pat.	Moorshedabad ..	{ Koshta. Meghlal pat. Tita pat. Hiutaj pat. Dholi pat. Peta pat. Metee.
Howrah ..	{ Sada pat. Desi pat. Teeta pat. Bangilaul pat. Ghrita kanchan pat. Maisal pat. Sanchiranga pat. Sada dhakai pat. Luckipore dholi pat. Rangri pat. Luckhipore bagi pat. Bangi pat. Amandholi pat.	Dinagepore ..	{ Koshta. Lelia koshta. Jate koshta. Marua koshta. Bow moochkee koshta. Ramna koshta. Ama koshta. Amumee koshta. Parbuita koshta. Patmadhai koshta. Chiral narioha. Gopal bhog. Kala.
24-Pergunnahs ..			

* Haimuntya, "wintery," of Sanskrit writers.

† Patra, leaf, Sanskrit.

Maldah	..	{ Muniasi patooa.	Sylhet	..	{ Nalia.
Rajshahye	..	{ Nalta patooa.			{ Koshta.
	..	{ Koshta.	Cachar	..	{ Pat.
	..	{ Pat.	Chittagong	..	{ Nalia.
	..	{ Koshta.		..	{ Narieb.
Rungpore	..	{ Patmadhai.	Noakhally	..	{ Koshta.
	..	{ Jato pat.		..	{ Thacheke.
	..	{ Parboi pat.		..	{ Nalita.
	..	{ Amoni pat.	Hill tracts of		
	..	{ Dhola pat.	Chittagong	..	{ Narish.
	..	{ Joli pat.		..	{ Nalia.
	..	{ Ausha pat.	Tipperah	..	{ Pat.
	..	{ Desi pat.		..	{ Koshta.
Bogra	..	{ Numlia pat.		..	{ Dhules sepori.
	..	{ Patnai pat.		..	{ Parbatya.
	..	{ Tosha.	Tirhoot	..	{ Poorbie.
	..	{ Amonia pat.		..	{ Madharie.
	..	{ Meglal pat.		..	{ Desi.
	..	{ Koch murdun pat.	Bhaugulpore	..	{ Patna.
	..	{ Pat.		..	{ Patna.
Pubna	..	{ Satnala koshta.		..	{ Hathen.
	..	{ Bura koshta.	Purneah	..	{ Bhadoja.
	..	{ Chhota koshta.		..	{ Muniasi.
	..	{ Pat.		..	{ Bhownachuk.
	..	{ Koshta.		..	{ Dhunua.
Darjeeling	..	{ Mervah pat.		..	{ Meglal.
	..	{ Sada pat.	Sonthal Pergs	..	{ Pat.
	..	{ Laul pat.		..	{ Koshta.
	..	{ Emliah.		..	{ Nalita.
	..	{ Choea marrah.	Cuttack	..	{ Jhunt.
Julpigori	..	{ Koshta.		..	{ Peta nalita.
	..	{ Pata.		..	{ Mudhoor nalita.
	..	{ Pat.		..	{ Nalita.
	..	{ Koshta.	Pooree	..	{ Jhote.
Cooch Behar	..	{ Hemouty.	Balasore	..	{ Jhote.
	..	{ Betree pat.	Cuttack Tributary	..	
	..	{ Pahariah.	Mehal	..	{ Nalita.
	..	{ Koshta.	Singbhoom	..	{ Chunchi pat.
	..	{ Pat.		..	{ Kanora do.
Dacca	..	{ Patmadhai.		..	{ Chunchi do.
	..	{ Dholessori.	Maunbhoom	..	{ Teeta do.
	..	{ Lall nalia.		..	{ Koshta.
	..	{ Koshta.	Goalparah	..	{ Pat.
Furreedpore	..	{ Bellan pat.		..	{ Pata.
	..	{ Bagi pat.		..	{ Ahee pata.
	..	{ Desi pat.	Kamroop	..	{ Mora pata.
	..	{ Koshta.		..	{ Shukta pata.
Backergunge	..	{ Bagi pat.		..	{ Teeta pata.
	..	{ Desi pat.		..	{ Jato pata.
	..	{ Nalta.	Durrung	..	{ Jath pat.
	..	{ Nalea.		..	{ Dehea pata.
	..	{ Koshta.		..	{ Lohokoree.
	..	{ Pat.	Nowgong	..	{ Teeta mara.
	..	{ Dhalsoonder.		..	{ Bengal mara.
Mymensing	..	{ Kuehiamuri.		..	{ Meetha mara.
	..	{ Dhullesor.	Seesaugor	..	{ Mora sak.
	..	{ Methe.		..	{ Mora pat.
	..	{ Lallpatta.		..	{ Tenga mora.
	..	{ Peehee	Luckimpore	..	{ Lohkori do.
	..			..	{ Chat do.
	..			..	{ Teeta do.
	..			..	{ Pat do.

The Malays call the plant *Rami-tsina* or Chinese hemp, and the Chinese, *Oi moa*; this latter name has a very strong resemblance to the Sanskrit *Au-ma*, signifying flaxen.

55. None of these names, however, has been adopted by foreigners to indicate the staple. This is the more remarkable as European nations interested themselves very

Introduction of the term jute in the English language.

largely in the manufacture of canvas and cordage with Indian fibres so early as the middle of the seventeenth century. Soon after the embassy of Sir Thomas Roe, the East India Company was permitted by the Mogul Government to establish a factory at Pipley, twenty-two miles from Balasore, it having obtained, in 1634, the privilege of a free resort to the port. The factories at the time at that place and in the neighbouring towns of Sdro, Bhudruk, Jajpore, and Huripore, carried on extensive ropeworks, and manufacture of fibre fabrics. The Dutch, in those days, also took a prominent part in these works, and had their *Lynbaan*, or ropeyard, in almost every station in which they traded. Francis Valentyn, in his *Keurlyke Beschryving van Choromandel, Pegu, Arrakan, Bengala, Mocha, &c.*, published at Amsterdam in 1726, notices most of these stations in detail. With reference to Palicol below Ganjam, he says: "There was here an important ropeyard and other works, at the head of which was a Dutch foreman. They manufactured there all kinds of ropeworks, and also canvas of hemp, to as great an extent as the East Company wanted them for their vessels. The hemp necessary for them came from the districts of Eloer, Rajmandri, which is about fifteen hours' distance from Palicol." The hemp here referred to was certainly not the fibre of the *Cannabis sativa*, but that of the *Corchorus olitorius*, or of the *Crotalaria juncea*; but the word jute does not occur with reference to it. Of Hariapoor (Huripore) he says: "This place brought sunns of that name; Cassari, much *Tuffatsjelas*, &c., &c., which were manufactured there." Again, "Bollua is a district where you find much sunn, and Siongel a locality where the *Siongelian sunns* are manufactured." Among the exports of Batavia and of Netherlands India, are generally mentioned *Groot zeyldoek*, large canvas from 35 to 36 ells in length, and *Zeil-kleeden* or "sack-cloth 40lb in a pack," but nothing of jute or jute-made canvas or gufny-cloth. He likewise states that the English East India Company had a great rope-yard at Hooghly; and in the selections from the unpublished Records of Government, Vol. I, Proceedings, 5th May 1766, there is mention made of a dispute with the Netherlands Company about a ropework at Balasore; but the word jute does not occur in any part of it. The Hooghly ropery was established about the beginning of the last century; and Valentyn, in 1726, describes it as situated behind the Resident's house, and says that "for the Company's vessels a great quantity of roping was made there, which was fit for hawsers for anchors;" but here also he says nothing of jute. In the earlier travels in India, such as those of Bernier, Fayer, and Sir Thomas Roe, the word jute is likewise absent. Indeed the earliest record to which I can trace it is the "Commercial Index to the Proceedings, of the late Board of Trade, for 1796," in which mention is made of jute having been sent to the Hon'ble Court of Directors on more than one occasion. In the year previous, Dr. Roxburgh had sent a bale of fibre prepared by himself from the bark of the produce of *Corchorus capsularis*, which he described as "the jute of the natives." Mention of this, however, occurs in the Proceedings for 1803. Two years previous to Dr. Roxburgh's invoice, *i.e.* in 1793, the Company's officers had sent to England 100 tons of fibre under the name of *pât*, not *jute*; and in acknowledging the invoice the Court of Directors enclosed a report of the Committee of Warehouses, dated 9th October 1793, in which it is said:—"Of *pât* your Committee are happy to be enabled to speak more favorably. Some of the most eminent dealers declare that it is not hemp, but a species of flax superior in quality to any known in the trade. One thousand tons of which would readily go off annually at from £40 to £60 per ton." In the MS. Commercial Index for 1796, the word *jute* occurs frequently, but it then seems not to have taken root, as in a despatch dated the 4th December 1800 the Secret Committee of the Court of Directors talk of the fibre as *pât*, and say "the article of *pât* is grown much more extensively by the natives than sunn, and may be procured in large quantities. The Board conceive that, if prepared in the European method, it ought to answer for many purposes for which hemp is now used in Europe." In 1801 the Commercial Residents of Chittagong, Maldah, and Rungpore, when writing about the prospects of the cultivation of sunn, make mention of *pât*, not *jute*. Soon after that time the word jute, however, seems to have entirely superseded all other names for the fibre in Government correspond-

ence, and it may therefore be safely assumed that the word came into use during the last decade of the eighteenth century.

56. Now the question arises, whence did the word come? To judge from

* The word jute is not Dutch.

Valentyn's work, down to 1726 the Dutch never used it in their factories on the seaboard of Orissa. Did they use it after that time? They engaged themselves largely in roperies and canvas manufactures, and it would not be at all improbable if it be supposed that they used a Dutch word to indicate the fibre. In the Dutch language *zijde* is silk, *zucht* silky, *zout* salt (mallows having been regarded as saltworts), and *zoot-je* a small bag or parcel, and any of these words could be very appropriately employed to indicate the glossy, silky fibre of the *Corchorus*; but there is no proof to show that the Dutch factors of Balasore did really use any of these words for *pát*.

57. In old works on chemistry the word *juter** is used to mean the saltish

Nor English.

quality of the earth. *Juta* is also equivalent to *juda* in Luke 1, 39,† and *Olus judaicum* is the old name of the marsh mallows, *Corchorus olitorius*. But there is nothing but the similarity of sound between *juter*, *juta*, *juda*, and *jute*, to ascribe the origin of the last to any of the preceding three words. The relation in their meanings is as far fetched as possible, and evidence altogether fails to show that English factors had, at the close of the last century, any reason to hunt in old chemical works for the name of an article which, by its native name of *pát*, was well known, and that at a time when they were freely importing Indian terms into English.

58. Dr. Wilson, in his *Glossary of Indian Terms*, sets down *jute* as a Bengali

Opinions of Dr. Wilson and others.

word, spelling it with a soft *t* and long *ú* (জুট); and Dr. Royle, in his *Fibrous Plants of India* (p. 243), supposes it to be derived from the Bengali *chat* or *chuti* (চট or চুটি), "canvas," "sackcloth," derived from the Sanskrit *radix চট chat* "to cover." Roxburgh, in his *Flora Indica*; Balfour, in his *Cyclopædia of India*; and Birdwood, in his *Catalogue of the Economic Products of the Presidency of Bombay*, have also accepted it as a Bengali word; but, singularly enough, the Bengalis generally do not recognise it as belonging to their vocabulary, and some of them regard it to have sprung up in the language of commerce, and introduced into it by British or other foreign merchants. The various Anglo-Oriental diglots which have been published from the middle of the last century down to the present period, give evidence of this uncertainty in their utter omission of the word from their contents. Robinson, in his *Law and other Terms*, published in 1860, has inserted the word as an English vocable, explaining it as চট চট (cháuchá sau), i.e., "cleansed or dressed fibre of the *Crotalaria juncea*." The derivations given above are all far-fetched, and by no means probable.

59. It has been suggested by a local officer, that as the Bengali word

Opinion of a local officer.

pát, meaning silk, has been applied to the *Corchorus*, so *jute* might have originated from *jhut-jhutá*, Hindi *jhutthá*, a corruption of the Sanskrit *uchchhishta* "ort," and in common use among the Europeans in silk factories in the districts of Burdwan, Nuddea, Rajshahye, Moorsshedabad and Pubna, for "the refuse silk in filatures where the thread is manufactured." This is, however, a mere conjecture, based only on a faint resemblance in the sounds of the two words. The word *jhutá* is used to indicate the first few threads of broken silk which come out before the right clue of a cocoon when boiling is caught. They are *jhutá* or "false" in contradistinction to the real or true clues of the cocoon fibre, and have no relation to offal, ort, or the *debris* left on a plate after a person has finished his meal, to which the word *uchchhishta* is applied. In commerce the *jhutá* of silk factories sells under the name of *chasam*. The fibre of the *Corchorus* has nothing whatever to do with any ort or offal; it is no refuse of any kind; nor is it allied with any falsehood, or the result of any first abortive attempt,

* Crabb's Universal Technological Dictionary.

† Maobeu's Dictionary of Ancient Geography.

and therefore it would be absurd to suppose that people would apply to it the term *jhutá*, whether it be in the sense of falsehood or offak.

60. The fact that Dr. Roxburgh first used the word *jute* to indicate *pát*, and the way in which he used it, "the *jute* of the natives," suggest the idea that he got it from the

Derivation of *jute*.

people about him in the Hon'ble Company's Botanical Garden at Sibpur. These people were the gardeners, and most of them were Uriyás, for the people of Orissa contribute at least three-fourths of the gardeners in and about Calcutta. It has been already shown in the list annexed to paragraph 54 that the words *jhont* and *jhot* are the vernacular names of jute in the Cuttack, Puri, Balasore, and Midnapore districts, and it has been ascertained that they are the prevailing terms in all Orissa for *pát*,—in Balasore the word *jhot* is the only name by which the *jute* is known,—and the inference, therefore, is that Dr. Roxburgh got the word from his Uriyá *mális*, and Europeans have since followed him in using the word, which, on his authority, they accepted to be the correct vernacular name for the staple. If it can be shown that the word had got currency before the time of Dr. Roxburgh, still the fact of the extensive roperies and canvas manufactories of the English factories on the sea-board of Orissa would point to the vernacular of that country as the source of the word. The words *jhont*, *jhot*, and *jhat*, are all derived from the Sanskrit root *jhat*, "to be entangled;" whence the Hindi *jhont* and *jhoti*, and the Bengali *jhont* and *jhauli*, meaning a tuft of hair, and particularly the large tuft on the crown of the head which all good Hindus are required to keep as a mark of their nationality. The root also implies "to become bushy," and the words *jhat*, *jhati*, and *jhad*, derived from it, mean "a thicket," "a bush," "a shrub," and they are accordingly used to name particular plants, such as *jhinti*—*Barleria cristata* and *Barleria dicholoma*. One form of the root *jhat* is *jat*, and from it are produced *jata* and *játá*, both meaning "matted hair;" sometimes these two words are used together, and sometimes separately, to indicate the "matted hair" of Samnyasis. Separately they are used to imply any thing tangled, as also uncarded fibre, like tow, &c. The two words are also separately applied to different plants or produce thereof; thus, *jata*, *jatámansi* and *játá*—*Valeriana jatamansi*; *juli*—*Ficus renosa*; *tála játá*, the spath of the palm tree, *Borassus flabelliformis*. The Sanskrit *jata*, when used as a Bengali word, is pronounced *jut*, which in sound and sense would indicate jute fibre, and may be taken to be the source of the English term. Since, however, the people of Bengal do not use the Sanskrit word to imply the fibre of the *Corchorus*, I am induced to believe that it has been derived directly from the Uriyá *jhot*, which itself is a vernacular form of the Sanskrit *jhat*. The only exception that can be taken to this opinion is, why should Dr. Roxburgh write it *jute* when his Uriyá informants pronounced it *jhot*? but looking to the innumerable instances in which that distinguished botanist, and European scholars generally, have softened, abraded, or otherwise altered vernacular terms in writing them in Roman letters, I think it may be set aside as altogether immaterial.

61. In paragraph 47 reference has already been made to the fact that some of the Sanskrit names of the *Corchorus* indicate that it was introduced into India from a foreign country; but the time when this introduction took place cannot be definitively fixed. The occurrence of the word *patta* in the Mahabharata takes us back to a remote period of antiquity, when exact dates were little cared for; and it would be labour lost to inquire of the date of, at the time so inconsequential an article as *pát*. It should be noticed, however, that though the plant was known in the country from the time of the Mahabharata, it was not very extensively cultivated until very recently. According to the reports received from the district officers, the cultivation of jute has been carried on in the districts of Bogra "since about the year 1847;" in the district of Noacolly and Tipperah for the last 20 years; in the 24-Pergunnahs "for many years;" in Hooghly "from a long time;" in Dacca "beyond the memory of man;" in Goalparah "before the time of British rule;" in Darjeeling "from the time of the Sikkim war;" and in Nowgong it is stated to have been known

Foreign origin of the jute plant, and the time when it was imported.

so far back as "400 years ago," when the use of the fibre in tying up books was expressly prohibited by Sunkar and Madhow. In the extreme west of the Hooghly district, where it abuts upon Burdwan, and in the northern part of Burdwan itself, the cultivation was begun only so late as 1872. In Dacca, according to the evidence of Mr. Monier, which is not printed, but which coincides with information derived from other sources, jute began to be largely cultivated only in 1865. The increase has been marked in Goalparah within the last 7 or 8 years; in Furreedpore, within the last 9 or 10 years; in the Baraset Sub-division of the 24-Pergunnahs, within the last 10 or 12 years; and in Backergunge, within the last 15 years. In Mymensing and Rungpore the cultivation has been gradually spreading for the last 25 years or thereabouts, but the extension has been notable there since the cultivation of indigo was abandoned. No precise period can be stated when the increase became marked in Rungpore. The increase, which has been progressive for about 25 years in Pubna, "has been significant within the last 6 or 7 years." It has been significant also in Purneah since 1867. In the remaining districts jute is simply stated to have been cultivated "from time immemorial."

It is scarcely necessary to observe here that these reports refer to the new impetus recently given to the export trade in jute. That it was largely cultivated for the fibre for home consumption, and also for gunny bags for the packing of articles exported from the country from a very early period, is well known.

62. As already stated, the jute of commerce is the product of two different species of plant, both belonging to the natural order *Tiliaceæ*. The order embraces several genera, the bark of which yields fibres; but of these the genus *Corchorus* is the most remarkable, as including six different species of valuable fibre-producing plants. These are *Corchorus capsularis*, *C. olitorius*, *C. fuscus*, *C. fascicularis*, *C. trilobatus*, and the *C. decemangularis*.

63. The *C. capsularis* is an annual plant, growing from five to ten feet high, with a cylindrical stalk as thick as a man's finger, and seldom branching except near the top. The leaves, which are of a light green colour, are about 4 to 5 inches long by one inch and a half broad towards the base, but tapering upwards into a long sharp point with edges cut into saw-like teeth; the two teeth next the stalk being prolonged into bristle-like points. The flowers are small and of a whitish-yellow colour, coming out in clusters of two or three together opposite the leaves. The seed-pods are short and globular, rough and wrinkled. In technical language it is thus described in botanical works:—"Annual, 5-10 feet: calyx deeply 5-cleft: petals 5: leaves alternate, oblong acuminate, serrated, two lower serratures terminating in narrow filaments: peduncles short: flowers whitish-yellow in clusters opposite the leaves: capsules globose, truncated, wrinkled and muricated, 5-celled: seeds few in each cell, without transverse partitions: in addition to the 5-partite cells there are other 5 alternating, smaller and empty."

64. The second species, the *C. olitorius*, is precisely similar to the last in general appearance, shape of leaves, colour of flower, and habits of growth; but it differs entirely in the formation of the seed-pod, which, in this species, is elongated (about two inches long), almost cylindrical, and about the thickness of a quill. I quote the following botanical description of the species from Major Drury's Useful Plants of India (p. 159):—"Annual, 5-6 feet erect: leaves alternate, ovate-acuminate, serrated, the two lower serratures terminated by a slender filament: peduncles 1-2 flowered: calyx 5-sepalled; petals 5 capsules nearly cylindrical, 10-ribbed, 5-celled, 5-valved: seeds numerous with nearly perfect transverse septa: flowers small, yellow." To convey an exact idea of the plant I annex a plate taken from a photograph of a plant reared in the Royal Botanic Garden, Sibpur, with which the foliage of the capsularis is almost identical. It shows the top of the plant in full flower with the seed-pods drawn separately on the sides. The pods of the capsularis are shown on the top of the plate.

TOP OF JUTE PLANT (*Corchorus olitorius*) ROYAL DOMINIC GAP



65. Each of these species has a white and a reddish variety. The stalks and leaves of the first variety are of a light green colour, whereas of the second variety the stalks are red and the leaves red-veined.

66. Of the other species of the *Corchorus*, which are said to yield jute, but which are not ordinarily cultivated for their fibre, the following description is given by Dr. Roxburgh in his *Flora Indica*:—

C. fuscus (*C. acutangularis*, Lam.).—Annual. Leaves ovate-oblong. Stamina from ten to fifteen. (Style single). Capsules subcylindrical, six-angled, three-pointed, three-celled, with one row of seeds in each.

C. fascicularis.—Annual, erect, ramous. Leaves lanceolate, serrate. Flowers in laterifolius, subsessile fascicles, sub-pentandrous. Capsules cylindric, three-celled.

C. trilobularis.—Annual, erect. Leaves lanceolate, serrate, the lower serratures with or without a bristle. Stipules ensiform. Flowers paired, peduncled, and pedicelled. Capsules filiform, three-celled, hispid; apex entire and obtuse.

C. decemangularis.—Annual, erect. Leaves elliptically oblong, obtusely serrate, lower serratures with or without a bristle.

Stipules ensiform. Flowers paired, subsessile. Capsules cylindric, ten-ribbed, five-celled; seeds imperfectly separated."

67. It is clear from the reports of local officers, and from local inquiries made by us, that the two species first named, viz. *C. capsularis* and *C. olitorius*, are the only plants which yield the real jute fibre. With a view to place this conclusion beyond all question, we caused a series of experiments to be made in the Royal Botanic Garden at Sibpur with seeds obtained by us from the several districts of Bengal, in which jute, or fibres passed sometimes for jute, are raised largely, scantily, or at all. The results of these experiments have been tabulated in the annexed statement (Appendix C, p. LI,) furnished by the Superintendent of the Garden, showing the districts where jute and the fibres palmed off for jute are grown, with the local and botanical names of the plants assigned to each description of seed procured by us, by the Superintendent after an experimental cultivation; and they clearly demonstrate that the two species named are the only plants which yield the true jute of commerce.

68. In further corroboration of this conclusion, I beg to state that soon after the constitution of the Commission, His Honor the Lieutenant-Governor thought it advisable to circulate a photograph of the top of a jute plant (life size), accompanied by a popular description of it, and to ask local officers to compare the photograph and description with the plants actually grown in their respective districts, to note points of resemblance or difference that might be observed, and to transmit seeds and seed-pods of the plants locally known as jute, in order that the nature of the plant or plants from which the real jute is drawn, and the extent to which such plant or plants are cultivated in Bengal, might be precisely determined.

69. The reports of the local officers, and an inspection of the seeds and seed-pods received therewith, proved it to be beyond doubt that the real jute is produced by the two species abovenamed, and that either one or the other of the two, or both varieties, are cultivated in forty-seven out of the fifty-eight districts embraced in the Lieutenant-Governorship of Bengal. In most districts of Lower Bengal both varieties of the two species are grown. The *C. capsularis*, however, is principally cultivated in the central and in some of the eastern districts, where, except in parts of Mymensing, the other species and its varieties are rare. But in the districts near Calcutta the *C. olitorius* is more largely grown, and from its fibre is manufactured the well-known Luckhipore jute of Hooghly and the 24-Pergunnahs, which also goes by the name of *desi* jute.

The names of the several districts, arranged according to the extent to which the jute plant is cultivated in each, are given below:—

Pubna... Both <i>C. capsularis</i> and <i>C. olitorius</i> .	Darjeeling... Both <i>C. capsularis</i> and <i>C. olitorius</i> .
Dinagapore ... Ditto.	Nowgong ... Ditto.
Rungpore ... Ditto.	Poorea ... Ditto.
Mymensing ... Ditto.	Nuddea ... Ditto.
Tipperah ... Ditto.	Balasore ... <i>C. capsularis</i> only.
Purneah ... Ditto.	Sylhet ... Ditto.
Julpigoree ... Ditto.	Kamroop ... Ditto.
24-Pergunnahs ... Ditto.	Durrung ... Ditto.
Bogra ... Ditto.	Chittagong ... Ditto.
Rajshahye ... Ditto.	Cachar ... Ditto.
Dacca ... Ditto.	Cuttack... Both <i>C. capsularis</i> and <i>C. olitorius</i> .
Hooghly ... Ditto.	*Bancoorah... <i>C. capsularis</i> only.
Cooch Behar ... <i>C. capsularis</i> only.	*Beerbhoom... Both <i>C. capsularis</i> and <i>C. olitorius</i> .
Furreedpore Both <i>C. capsularis</i> and <i>C. olitorius</i> .	Tirhoot ... Ditto.
Goalparah ... <i>C. capsularis</i> only.	Bhaugulpore ... Ditto.
Backergunge Both <i>C. capsularis</i> and <i>C. olitorius</i> .	Sonthal Pergunnahs .. Ditto.
Midnapore ... Ditto.	Singbhoom... <i>C. olitorius</i> only.
Sunderbuns of Jessore, 24-Pergunnahs, and Backergunge... Ditto.	Maunbhoom... Both <i>C. capsularis</i> and <i>C. olitorius</i> .
Jessore ... Ditto.	*Seesaugor ... Ditto.
Cuttack Tributary Mehals ... Ditto.	Luckhimpore ... Ditto.
Burdwan ... Ditto.	Chota Nagpore, Tributary Mehals, Ditto.
Moorshedabad... Ditto.	†Lohardugga ... Ditto.
Noakhally ... Ditto.	*Hill Tracts of Chittagong ... <i>C. capsularis</i> only.
Maldah ... Ditto.	
Howrah ... Ditto.	

70. Generally speaking, jute is extensively cultivated in the districts

Districts where jute is grown most.

of Pubna, Dinagapore, Rungpore, Mymensing, Tipperah, Purneah, Julpigoree, Bogra, Dacca, Hooghly, and the 24-Pergunnahs; moderately in Cooch Behar, Furreedpore, Goalparah, Rajshahye, and Backergunge; scantily in Midnapore, Burdwan, Nuddea, Moorshedabad, Maldah, Howrah, Tirhoot, and Bhaugulpore. The Commissioner of the Sunderbuns and the Deputy Commissioners of Durrung, Nowgong, Seesaugor, the Sonthal Pergunnahs, Maunbhoom, Singbhoom, and Cachar, state that whatever jute is grown in their respective jurisdictions is locally consumed, and the produce in some cases is insufficient even for local demands. I annex a map showing the districts and parts of districts in the provinces under the Government of Bengal where jute is grown, and the different qualities of the fibres produced. The map is so shaded as to show at a glance the extent of cultivation in each district.

71. The following special remarks extracted from the local reports

Districts where jute is sparingly grown.

regarding some of these districts, may perhaps be of interest, as accounting for the backwardness of jute cultivation in those districts:—

Jessore.—"One cause of the depressed condition of jute cultivation is that in the northern divisions of the districts the ryots' attention is engrossed by the two most important manufactures of indigo and date-sugar."

Burdwan.—"The cultivation of jute attracts little attention of the agriculturists of this district. The reason is obvious enough; the soil over a great part of the district is generally hard, and on the west it is laterite, and therefore unsuited to the cultivation of this crop."

* Grown as an edible.

† Grow wild.

Moorshedabad.—"There is no trade of any extent in the article." The present condition of the cultivation "enables the natives of the district to supply their home wants, and so far benefit the people. As the cultivation is on a very small scale, it does not affect the production of the necessary amount of cereals."

Maldah.—"A considerable proportion of the district consists of alluvial soil, and is too light for the growth of the fibre-producing plants."

Bancoorah.—"In this district there is no regular cultivation of jute." In Thanuah Bissenpore it is grown in small quantities as an edible, and in Thanuah Onda sugarcane fields are occasionally fenced with the jute plant." The soil in this district is generally not favorable to jute.

Beerbhoom.—"The plant or plants known as *Kostá* or *Pát* is not grown for fibre in any part of this district. Here and there a plant called *Pát* or *Botocary* is grown for the leaves, which are eaten as a vegetable." The soil here, as in the last named district, is not well suited for jute.

Sonthal Pergunnahs.—"The jute cultivation is carried on in this tract on a very limited scale, both because the cultivating classes are wanting in enterprise, as well as because the soil is not generally adapted to the growth of the plant."

Mamabhoom.—"The soil and climate of this district, where the jute cultivation is carried on only to a small extent, are considered not "well adapted for the growth of fibre-yielding plants."

Districts where jute is not grown at all.

72. No jute is grown in the following districts:—

Hill Tipperah.
Patna.
Gya.
Shahabad.
Sarun.
Chumparun.

Monghyr.
Hazarcebaugh.
Naga Hills.
Khasi and Jynteah Hills.
Garó Hills.

73. In so wide and diversified a tract of country as Bengal is, it is to

be expected that the physical character of the land on which the jute plant is grown should vary considerably in different parts. High lands, low lands, recent alluvial formations or *churs*, dry lands, humid lands, are all more or less cultivated with jute. Generally, however, all such lands may be classed under the heads of—1st, *Sund*, high land, which is generally reserved for the cultivation of fruit-trees, pulses, vegetables, tobacco, sugarcane, and the early rice; and, 2nd, *Sáli*, or low land, on which the late rice-crop is grown.

74. As regards the first description, *i.e.*, *sund* land, I quote the following extracts from the reports of local officers:—

High land.

Nudda.—"Jute is sown on high and dry lands fitted for sowing *aus* paddy, and cereals."

Jessore.—"The cultivation is carried on on deserted homesteads and *pálan* lands adjoining a ryot's residence."

• 24-**Pergunnahs.**—"Jute is always cultivated on high lands, *i.e.*, lands fit for homesteads and for the *aus* rice crop."

Hoochly.—"High paddy lands, *viz.* those on which *aus* paddy is cultivated, are the lands which are used for jute cultivation."

Rungpore.—"Low grounds are rejected, because water collects there during the rains, which is prejudicial to the growth of the plant."

Mymensing.—"The *aus* varieties of jute are cultivated upon high lands near the ryot's house, and not subject to inundation."

Dacca.—"On the higher lands a finer and shorter fibre grows."

Sylhet.—"The quality of jute produced on *churs* is comparatively inferior to that produced on *chora* lands (high lands close to homesteads)."

Durrung.—"The situation chosen, generally speaking, is within the homestead land, or immediately outside its limit."

Tirhoot.—"It is also grown in *mutjar* and *bhet*," *i.e.*, foundations of homesteads.

Bhaugulpore.—"The land selected is generally high and rich from its vicinity to the villages."

Mr. Gordon, Superintendent of the Gouripore Mills, whose evidence is entitled to much weight, says that the high land crops, which he experimentally cultivated, gave a far superior yield to the plants on the *chur* lands in strength, length, and colour of fibre; (Appendix B, No. 21, p. xv,) and this opinion is supported by the testimony of Mr. David of Dacca (Appendix B, No. 3, p. iii,) whose experience of jute is large. He says, "High lands produce the best jute." Dr. Roxburgh, in a paper written in January 1801, observes:—"Hemp may be cultivated to greater advantage over the interior parts of Bengal and Behar, where the seed should be sown about the beginning of the periodical rains, or earlier, if there have been frequent showers, on elevated spots of rich loamy soil, such as the ryots cultivate tobacco, *sunu* and *pât* on, near their habitation."

75. On the other hand the district reports from Furreedpore, Backergunge, Pubna, and Mymensingh, supply a great weight of evidence in favour of the adaptability of *sâli* land to the culture of jute.

The Collector of Mymensingh especially remarks that in that district "probably at least four-fifths of the jute is grown upon the low lands."

The sub-divisional officer at Serajgunge, in Pubna, states:—"I find that the land sown with *tîl* and *amun*, which in these parts are planted at the same time and on the same field, is sown with jute when the crop is required."

The Magistrate of Furreedpore observes:—" *Bellam pâl* will grow in shallow water without injury."

76. There is ample evidence also to show that the jute plant thrives freely on *chur* lands, especially such as are renovated by deposits of silt left on the subsidence of the annual floods.

The Collector of Tipperah, in whose district jute is largely grown, observes:—"The best kind of soil is that which is loamy and sandy, as on the river banks and in *churs*."

The Collector of Dacca remarks:—"The coarser, heavier jute is grown on lowish *chur* lands all over the district."

Sheik Shaker Mahmood, in his evidence, says:—"The land on which I grow it (jute) is *chur* land." (Appendix B, No. 60, p. xli.)

Baboo Ram Sunker Sen, in an interesting paper he wrote in 1864, expresses his opinion that *churs* are especially well adapted to the growth of the plant.

During the course of our own local inquiries, we saw the *churs* on both sides of the rivers Brahmaputra, Teesta, Lukheca, covered all over with extensive fields of jute.

77. The plant also grows luxuriantly in the Sunderbuns, where the land is more or less impregnated with salt; and I have seen jute thrive in the marshes of Furreedpore and Backergunge in waist-deep water. The fact is, the growing demand for the staple has stimulated cultivation to such an extent that, as the Collector of Rungpore very justly observes, "it has caused all kinds of soil to be used independently of their fitness for the cultivation, whenever other circumstances are favourable, and a crop can be anyhow raised;" and according to the evidence of Mr. David, already referred to, "cultivators sow jute anywhere. Last year they even cleared away bamboo jungle to sow jute." (Appendix B, No. 3, p. iii.)

78. The great bulk of jute that comes from the central and some of the eastern districts is grown on *churs* and on inferior soil, but in the *desi*, or the littoral districts, a larger proportion is grown inland than on the banks of the rivers. In the early days of this cultivation, however, when jute was raised for home consumption only, it used to be grown only on raised lands close to the grower's homestead. On the whole, the balance of evidence is decidedly in favour of high or *sunu* lands as the best for jute, provided all the other conditions

necessary for its healthy growth be attainable ; but that low lands and *churs* are not unsuited, *churs* ranking midway between the two.

79. In most of the reports received, references are made to the adaptability or

Chemical character of jute land.

otherwise of the soils of particular places to the jute plant, and the laterite and other soils are described as unfit for its cultivation ; but no detailed description has been obtained regarding the nature and constituents of the soil best suited to it. The attention of the Commission was especially directed to the subject by Government, and the Commissioners tried their utmost to obtain full information under this head. Unfortunately, however, the Commissioners were not in a position themselves to carry on any extensive series of chemical analyses of soils, and the time of the Government Chemical Examiner was so fully occupied by other and onerous duties that he could not help them in the matter. The conditions which he laid down for the collection of soils were also such that the Commission could not carry them out, particularly as it was necessary for a satisfactory chemical solution of the several questions involved that at least five hundred different specimens of soils should be analysed, so that comparisons may be made of the different kinds of soil on which the jute plant grows equally well, but which apparently are dissimilar, and those special constituents of the soil which are peculiarly favorable to the jute plant, and without which it does not thrive, may be ascertained. Under these circumstances I am obliged to depend upon such popular descriptions of soil as are familiar to the people of this country, and what the local officers have used in their reports.

80. In the district of Burdwan the plant is grown on *dōās māti*, or soil com-

Favorable soil.

posed of rich clay and sand in equal or nearly equal proportions. In Mymensing it grows on "soil consisting of a mixture of clay and sand, or sand combined with alluvial deposit; in Backergunge, "on loam mixed with a little sand;" in Cooch Behar, "on soil with a certain admixture of sand;" in Tipperah, "on loamy and sandy" soil; in Pubna, "on land which is neither inundated, nor dry, the soil being loam, *i.e.*, half clay and half sand."

On the other hand the jute plant appears not to be averse to a clayey soil. It grows in the Barripore Sub-division of the 24-Pergunnahs "on *mātiāl* or clayey soil;" in Hooghly, according to the district officer and Baboo Joykissen Mookerjee, "on clayey soil," which in their opinion is "best suited for jute cultivation;" in Moorsheadabad also on "clayey soil," which is considered there, too, to be "best adapted for jute;" in Noakhally "on high land, the soil of which is called *āttilāi*," *i.e.*, stiff and sticky; and in Cuttack "on high land, * * * rich and clayey."

It also thrives in ferruginous soil, as in Bhawal, in the district of Dacca, where jute is pretty largely cultivated; and the fibre produced there is considered to be among the best descriptions which find their way to the markets of Dacca and Naraingunge.

81. Laterite and gravelly soil are, however, not favorable to the growth

Unfavorable soil.

of this plant, and in confirmation of this opinion I may instance the cases of Bancoorah, Beerbloom, and portions of Burdwan and Midnapore, where the soil is chiefly laterite, and where consequently jute is very scantily raised; as also of Hazareebaugh, where the soil is chiefly gravelly and dry.

Indeed, accounting for the very meagre cultivation of this plant for the manufacture of fibre, the local reports from the three first named districts, as has been shown before (*ante*, p. 23), lay great stress on the unsuitability of the laterite soil of the greater part of those districts to the growth of jute. Even in this there is, however, an exception. The Collector of Midnapore, in whose district the fibre is pretty extensively grown, observes, "Jute grows in laterite soil;" he adds, however, that "in such soil it does thrive, but not so well as in soil of a deep alluvial description. For instance the jute grown in the *Jungle Mehals*, the soil of which is laterite, does not thrive so well as that in the *Bār Mehals*, which are composed of deep alluvium." A light sandy soil is not also well suited

to jute, and Chumparun, Sarun, Gya, and Shahabad, where the character of the surface is mostly sandy, do not grow jute at all.

82. As regards climate, the tenor of the local reports and the information gathered by the late Mr. Anstruther and myself, alike go to show that a hot, damp atmosphere is most favorable to the growth of the plant. Too much rain at the beginning of the season and early floods are equally destructive to the young plants, and injurious to the prospects of the crop. Except in low situations, seeds are never sown until after a shower of rain to help germination. Alternate rain and sunshine are found to be most congenial to the jute plant, but excessive rain after the plant has attained a height of two to three feet will not prove materially injurious so long as no water lodges at the roots. The water when so lodged does not kill the plant, for, as already stated, (*ante*, p. 23) in the Backergunge and Furreedpore districts jute grows even in waist-deep water; but it promotes the growth of suckers, which makes the fibre what is technically called "rooty." It should be added here that in the *deorá* districts of Furreedpore and Backergunge the plant which thrives well in marshes is the *deorá* jute, which in reality is only the *mestá* (*Hibiscus cannabinus*), and the bulk of the jute proper produced there is universally considered of comparatively much less commercial value.

Frequent light showers at first, and heavier rains afterwards, with the gradual rise of the rivers, and a fair amount of sunshine, contribute very largely to the healthy growth of the plant. My inquiries lead me to believe that it suffers less injury from excess of rainfall than from the entire want of it. It is admitted on all hands that drought always stunts their growth, and very often, as we ourselves observed during the present year in Rungpore and Goalparah, even destroys them, if not sufficiently developed. But heavy rains have no such destructive effect on the plant so long as they do not drown the plants and there is sufficient sunshine to afford the necessary warmth. It is this want of heavy rain or humidity in the atmosphere, added to the unsuitableness of the soil, that jute is so little grown in Bancoorah and Beerbhoom and in the districts of the Chota Nagpore Division, and that in the districts of Monghyr, Patna, Gya, Shahabad, Sarun, and Chumparun, it is not grown at all. The Collector of Sarun writes that the dryness of the climate in that district is in his opinion the probable reason why jute is not grown there. To the same effect is the opinion of the Collector of Monghyr, who, in sending up a specimen of jute grown in the Government garden, where the crop proved to be a failure, writes: "As I have said before, I do not think the dry climate of Monghyr is well suited to the growth of the plant." In Lucknow, I learn from a communication made by the Chief Commissioner of Oudh to the Government of Bengal, the cultivation of jute was attempted in the experimental garden there, but it failed. Sir George Couper has, however, expressed his readiness to direct a trial to be given to the cultivation in the more humid climate of the Terai.

83. The periods of the year for sowing, and the manner in which the land is prepared for the jute cultivation, vary in different districts, and sometimes even in different parts of the same district.

24. *Pergunnahs*.—In the sudder sub-division of this district land is broken up from September till November (Aswina and Kártika), and ploughing is repeated at intervals of 30 days till Fálguna (February—March), when the land is again ploughed four or five times successively. In the Satkheera sub-division land is ploughed in Kártika (October—November) and left untouched till May or June (Vaisákha or Jyaistha), when it is re-ploughed twice or thrice, and levelled with the *moi*, an implement which is also called *bansoori* or ladder, it being in fact a rude substitute for a harrow made of bamboos. In the Baraset sub-division land is ploughed ten or twelve times from October till May (Kártika to Vaisákha). In the Barripore sub-division it is ploughed five or six times in Mágha and Fálguna (February and March), after the removal of the cold-weather crops. In the Diamond Harbour sub-division

it is ploughed in Vaisákha (April—May), allowed to lie untouched for ten days, then levelled and weeded. In the Basirhat sub-division it is ploughed and harrowed from eight to ten times, so late as in the beginning of June (Jyaistha).

Mymensing.—Like rice, jute in this district is of two descriptions, namely, *aus* and *aman*. The *aus* jute is sown earlier than the *aman*, and the field on which it is to be grown is sometimes laid with manure, which is never used in the case of the *aman* crop. The tillage in some places is begun between August and October; *mustard* is sown thereon in Kártika (October—November); the ploughing is then repeated eight or ten times in Mágha (January—February). In other places, especially on the skirts of *beels*, when the cold-weather crops are removed in January and February, land is ploughed four times, and, after a few days, levelled with a ladder, then ploughed up again as often. Near the time of sowing it is thoroughly re-ploughed; the clods are broken with a mattock or with the ladder, and the weeds are removed to a good extent, but not thoroughly. High lands, however, are ploughed in May (Vaisákha). The land is manured sometimes, but with cow-dung only. According to some authority the land is in some cases ploughed as often as twenty-five times. (History and Statistics of the Dacca Division, 1868.)

Hooghly.—The land is ploughed from three to five times, twice harrowed, levelled with the ladder, and once weeded. In some places the tillage is begun in October (Kártika), and in other places, the Serampore sub-division for instance, in Fálguna (February—March). Sometimes fresh earth and sometimes cow-dung is used by way of manure; but where the soil is poor, oil-cake is substituted. Sheeps' dung and urine have also been successfully tried.

Burdwan.—The ploughing of the land is begun in Mágha (January—February), and is repeated about eight times till Vaisákha (April—May). The land is also manured with cow-dung and levelled.

Bhaugulpore.—The land is dug up or ploughed twice in Mágha (January—February), and again as often in the end of May or beginning of June (Jyaistha). The weeds are then left to dry till about the end of July, or the beginning of August (Srávana), when the field is ploughed again.

Furzedpore.—The land is twice ploughed and harrowed in Mágha (January—February), and is subjected to the same processes, as often in Fálguna (February—March) and again in Chaitra (April), when it is turned up with the country hoe. In some places it is ploughed for the first time in Chaitra (March—April), and the clods are thoroughly broken up.

Backergunge.—In this district the tillage is begun in Kártika (October—November), when the land is prepared for the winter crop. After that crop has been harvested in Fálguna, the worst jute land, *i.e.*, such as have a hard dry soil overrun with grass, is ploughed five times, and harrowed twice; ordinary land is ploughed four times, and harrowed once; while swampy land with little or no vegetation on it is ploughed thrice and harrowed once.

Rungpore.—The tillage takes place from November till February (Aghrána to Mágha). The land is twice ploughed, and then harrowed to level the surface and collect the clods of earth and weeds thrown up by the plough. The weeds are burnt on the ground, and the clods are broken with the *kurshi*, a sort of mallet. The land is then re-ploughed. Before sowing it is again twice ploughed and harrowed. In Kankina in this district, when the ryot does not own and cannot afford to hire a plough and cattle, the land is turned up with the hoe.

Goalparah.—As in the case of the *aus* paddy crops, so in that of jute, the land on which it is grown is tilled in Fálguna (February—March), and the clods of earth turned up by the plough are broken down with the ladder.

Dacca.—"The oftener and the more thoroughly the land is ploughed the larger is the yield. The time of tillage, however, varies. * Friable, sandy soils are ploughed as early as in March, but the larger proportion of the land in the district only after the first showers of rain in April."

Pubna.—The tillage here is begun sometimes in Aghrána (November—December) and sometimes in Mágha (January—February). The land is ploughed and harrowed, and the clods are broken with a mattock.

Tipperah.—The land is manured with cow-dung and then ploughed and harrowed in December: in the Bramunbaria sub-division and in the Comillah sub-division, a few days before sowing.

Sylhet.—The land is here manured with cow-dung first in Kártika (October—November), and again in Vaisákha (April—May), when it is ploughed for the sowings.

By way of a summary of the above, it may be generally said that the preparation of the soil is commenced early in the case of the low lands, *churs*, *beels*, &c., where there is considerable risk of water rising high very early, but deferred to a later period in that of high lands, where no such apprehension need be entertained. The number of ploughings required is dependent entirely on the nature of the soil; a clayey hard soil requiring a greater number of ploughings than a light sandy or loamy one. Under any circumstance the land should be so ploughed as to render the soil finely pulverulent, and to expose every part of it repeatedly to the sun.

84. Little attention seems to be paid by cultivators in the selection of seeds for the cultivation of the jute plant.

Seed used.

Except in the Serampore sub-division and in some other parts of the Hooghly district, seed is generally gathered in October from the worst plants purposely left standing in the outskirts of the fields after the harvest has been reaped. The reason for the preference of the bad plants for seed is that they are not good for fibre, and if not utilized for seeds would be wasted, and the ryot does not wish to lose the benefit of the fibre to be obtained from the well-grown plants by allowing them to remain standing till the seed-pods are matured. In the Mymensing district a portion of the field is set aside for seeds without reference to the quality of the plants growing thereon, and so both healthy and ill-grown plants indiscriminately contribute the seeds used there.

85. As a rule, jute seed is not bought and sold, but it is, as stated before, generally preserved by the ryots from plants specially set apart.

"Towards Dacca," says Mr. Thornton of Naraingunge (Appendix B, No. 40, p. xxix), "the seed for sowing is taken from the plants outside the field, that is, from the stunted plants which will not yield fibre good enough for the market."

Kodrutoollah Mollah and others of Furreedpore admitted before me (Appendix B, No. 48, p. xxxiii), that a corner of the field with ill-grown plants is reserved for seeds; these are cut in Kártik.

On the other hand, Baboo Mudun Mohun Bysack of Dacca, in his statement (Appendix B, No. 41, p. xxx) says: "If possible, seeds for next year's sowing are taken from the best and the most healthy plants." In Backergunge the cultivators (Appendix B, No. 50, p. xxxv) said: "In this part of the district the best plants are left for seeds." Well-grown plants are also occasionally set apart for the same purpose in parts of Mymensing and other districts.

My inquiries, however, go to show that in most instances the plants in a corner of the field are left for seed, and are cut in Aswina or Kártika (September, October and November). After gathering the pods they are dried in the sun for four or five days, in Goalparah the period of drying being extended from five to ten days (evidence of Shoar Nysho, Appendix B, No. 65, p. xliv). The seeds are then threshed, gathered, and stored up either in a basket, bag, or earthen pot.

But I have nowhere heard of a practice^{*} referred to by Dr. McDonell, the Managing Director of the Serajgunge Jute Mills, in the following passage of a memorandum now before me:—"I have been told that the seed ought not to be allowed to ripen on the plant, but that the top branches, on which the capsules containing the seed grows, ought to be cut at an early period, and dipped into hot water for a moment, and then allowed to dry. Seed thus prepared is said to give a far better crop than that allowed to ripen on the stems."

86. No change of seed is ever resorted to in any district, as far as I have been able to ascertain; and for this, among other reasons, no improvement is to be found in the jute plant now grown.

87. I have already said that, as a rule, the seed of jute is not bought and sold; but when it is sold it does not fetch more than Rs. 2 the maund, though in times of demand the price sometimes rises to 4 or 5 seers the rupee. Mr. Gordon, the Superintendent of the Gouriporo Mills, once paid so much as Rs. 10 a maund for seed which he purchased in the village of Nyehatce.

88. From inquiries made by me, I learn that the average produce per acre of the jute seed (without husks) is about $4\frac{1}{2}$ maunds of 80 tolahs to the seer.

89. The quantity of seed used in sowing a beegah of land varies greatly in different districts; thus:—

	Seers.
Hooghly	1 $\frac{3}{4}$
Sylhet and Backergunge	1
Mymensing	1 $\frac{3}{4}$
Goalparah	2
Backergunge and Rajshahye	2 $\frac{1}{2}$
Rungpore	2 to 3
Furroedpore	3
24-Pergunnahs	4
Bhaugulpore	5
Burdwan	6 $\frac{1}{2}$

90. As in the case of ploughing, so in the period of sowing, there are marked differences; but the mode of sowing is with one exception alike everywhere. The seeds are sown broadcast on a clear, sunny day, and covered over with a thin crust of earth, either by the hand, or by a *bindi* or harrow, or a *moi* or ladder, or, as in Bhaugulpore and Julpigoree, by beams of wood drawn over the field by oxen. The exception refers to some tracts in the Sylhet district where sowing is effected in seed-beds, and the seedlings are subsequently transplanted in the fields. The following are the details of the different times selected by the ryots for sowing in some of the jute-growing districts:—

24-Pergunnahs.—The seed is sown in the month of Jyaistha (May—June) in the Satkhcra and Baraset sub-divisions after a shower of rain, and from latter end of Vaisákha till the middle of Jyaistha in the Barripore and Diamond Harbour sub-divisions, and also in the sudder sub-division.

Pubna.—The sowings are carried on here from the close of February to the beginning of May, the earlier season being selected for the low lands subject to inundation, and the later for the high lands, being timed also as much as possible according to the rainfall during the intervening period.

Mymensing.—The land is sown in this district from the middle to the end of Chaitra (March—April), as soon as it has been sufficiently moistened by a fall of rain.

Dacca.—According to the nature of the land on which the crop is to be grown, the seed is here put down between the end of March (middle of Chaitra) and the beginning of June (middle of Jyaistha).

Backergunge.—Seed is sown at the end of March or beginning of April (Chaitra).

Rajshahye.—The time for sowing depends much upon soil and situation, but ordinarily it is between March (middle of Falgún) and middle of April (end of Chaitra), though in some cases a later season is not held objectionable.

Dinagepore.—Here the sowings take place from the 15th of March till the middle of May (Chaitra, Vaisákha, and Jyaistha).

Goalparah.—The sowing is begun here after a shower of rain in April and continued till the end of May (middle of Jyaistha).

Julpigoree.—Seed is sown in March and April (Chaitra and middle of Vaisákha).

91. On germination, which takes place within three to four days after sowing in Backergunge, Mymensing, and Julpigoree, and seven to eight days in Rajshahye and Luckimpore,

Weeding, &c., &c.

the fields are harrowed, or weeded, or subjected to both processes.

In Pubna, the field is "weeded once, or at most twice," and the plants are thinned; in Dacca it is weeded "as often as necessary" after the plant "grows an inch or two high;" in Tipperah, "when the plants are two feet high, the weakly ones are removed to thin the field;" in Rajshahye, when the plants are sufficiently high, "say half a cubit or 9 inches high," the field "is well weeded;" in Mymensing, the weeding is done with a *binda* or harrow, but in some parts of the district "a *sayin* (a kind of scythe with a sharp, convex edge) is used;" in Backergunge, "the field is once weeded on germination, and again sometimes when the plants are 15 to 18 inches in height;" in the Serampore sub-division of Hooghly, "when the plants are about 5 inches high, the field is weeded and thinned;" in Furreedpore, "when the plants are from 4 to 8 feet high, the field is sometimes weeded;" in the Baraset sub-division of the 24-Pergunnahs the field is harrowed and weeded when the plants are a foot high, and the weeding is done when the plants are 5 or 6 inches high; and the process is repeated twice and even thrice in the Burdwan district.

No tending is considered necessary after germination in some parts of Furreedpore, and after the plants are sufficiently grown in the Basirhant sub-division of the 24-Pergunnahs. In the Satkheera sub-division of the 24-Pergunnahs no weeding is ever resorted to. In other districts the processes of weeding and thinning are carried on in different degrees.

92. Overcrowding in a field is known to check the full development of the jute plant, and for this reason the crop is thinned whenever it becomes too thick by the removal of the more backward plants. Ordinarily the space left between the plants is six inches, and the thinning is carried to that extent, but in some places the plants are left wider apart. In the Barripore and Diamond Harbour sub-divisions of the 24-Pergunnahs the usual distance from plant to plant is 8 to 10 inches.

93. The season for the jute harvest necessarily depends on the time when the seed has been sown. In Maldah the crop is reaped from the beginning of June (middle of Jyaistha) till the end of August (middle of Bhádra); in Cachar and Backergunge, and in some parts of Furreedpore, from the beginning of July (middle of Ashádh) to the end of August (middle of Bhádra); in Cuttack, in all August (from the middle of Srávana to the middle of Bhádra); in Nowgong from the middle of July to the middle of September (Srávana and Bhádra); and in Goalparah from September till the end of November (middle of Bhádra to the middle of Agrhána). In Luckimpore, in the Baraset sub-division of the 24-Pergunnahs, and in some parts of Furreedpore, the jute is harvested from the middle of August to the middle of October (Bhádra and Aswina). About this time the *aus* jute is also cut in Mymensing. In Rajshahye the plants of the sowings of Fálguna and Chaitra are ready for the sickle at the end of June or beginning of July (middle of Ashádh); but the plants of later sowings are cut in September or the beginning of October (Bhádra and Aswina). In certain parts of Pubna where *desul* jute is grown, the crop is harvested so early that the new fibre is often brought into market about the 15th of June. During the present year Mr. Anstruther and myself saw new jute at Serajgunge on the 26th June.

94. The jute plant is cut generally near the root, unless the lower end is overrun with suckers. The instrument used is either a bill-hook (*dáo*) or a sickle (*kasté*) in all the districts of Bengal, except in some parts of Furreedpore, where the plants are pulled up, when growing on swampy land under any depth of water.

Mode of reaping.

95. The time considered best for cutting the plant is when it is in flower, and just before the appearance of the pods. The fibre of the plant, then cut, is of superior quality. But it so happens that about this time the ryot's attention is engaged with other crops, either to be sown or reaped; and the great mass of ryots are not in circumstances to incur the necessary outlay for hired labour to gather in this crop. The plants are therefore often allowed to run to seed, sometimes even the seed-pods are allowed to ripen before the crop is cut.

Sometimes, again, it also happens that to avoid an impending deluge of water on the fields, and sometimes, too, from a wish to be early in the market, the ryot pulls up or cuts the plant even before it has flowered.

The fibre from the plants which have not flowered is weak; while the fibre from the plants in seed is harsh and wanting in gloss, though it is heavier and stronger than the fibre of the plants cut in flowers. Whenever practicable, however, the plant is cut, either when flowering or when the flowering is just completed.

96. Among the chief reasons for the late cutting of the plant, the ryots of Meerungunge on the Teesta, a place notorious for the bad quality of its jute, urge that the "plants cut in flower do not yield a large quantity of fibre." They say: "We cut in seed; and many people cut when the seeds are almost ripe." It is evident that this is the principal cause of the fibre becoming woody. Besides, when the plants "are cut in the months of Aswina and Kártika, the water in the *bheels*, &c., almost dries up, and the stalks are deprived of the means of proper rotting."

The traders at Meerungunge, whom the Commission consulted, complained that the late cutting practised in Meerungunge not only made the fibre woody, but also spoiled its colour. They say: "We have repeatedly pointed this out to the ryots; but they do not heed us, and persist in old customs. Ryots here, instead of cutting a few inches above the root, as is done in other places, cut as close to the root as possible, thinking that they lose so much in weight if they cut a few inches higher. The jute plant if cut in flower will yield half of what the produce will be if cut late in the season and in full seed."

97. After the crop has been collected, the plants are in some districts stacked in the field and exposed to the action of the dew and sunshine, till the leaves, which if steeped along with the stalks are said to discolour the fibre, have dropped off. In others the leaves are said to add to the weight of the stalks and make them sink readily, and therefore they are not removed. Elsewhere the process of stacking is said to bring on the rotting of the bark more quickly, and accordingly the plants, after reaping, are left in the field for two days in Jessore, Burdwan, Hooghly, and Howrah; for two to three days in the Baraset sub-division of the 24-Pergunnahs, in Julpigoree, Sylhet, and Tirlhoot; for three to four days in Cachar, Darjeeling, and in the Serampore sub-division of Hooghly; for five days in Bhāugulpore; and for seven to eight days in the Diamond Harbour sub-division of the 24-Pergunnahs. But in the great majority of districts stacking is not practised.

The stalks, when cut, are made up into bundles, each of a weight sufficient for one man to carry, and in some places of two sizes, long and short, and in other places of three sizes, long, middling, and short.

98. The swaths or bundles of stalks, except in the districts above named, are thrown into water at once after the plants have been reaped.

99. The district officers, private gentlemen, and agriculturists consulted, are, with one or two exceptions, unanimously of opinion that stagnant water, especially such as contains a large proportion of decomposing vegetation, expedites the process of retting. There is great risk of the bundles being swept away by a sudden flood if steeped in a stream; serious disadvantage is also apprehended of the fibre being impregnated with the sand which is always carried in suspension by river currents. Stagnant water, therefore, wherever accessible, is resorted

to for this process. But where *bheels* and stagnant sheets of water are not accessible, or where the river is near at hand, the stalks are steeped in the still pools or bays of a tidal river, and sometimes also in running water.

100. The recourse to stagnant pools is injurious to the colour of the fibre. The sub-divisional officer at Bramunbaria, in Tipperah, says : "Tidal (running) water is said to be preferable to stagnant, as the fibre in the former case is stronger." To the same effect writes the Commissioner of Chittagong :— "The quality of fibre depends on the description of water in which the plant is steeped. The Buldakhal jute claims its superiority simply because of the contiguity of the River Megna, which affords facilities and good water for steeping purposes; but in Sarail, as recourse is had to *bheels* and *khals*, the fibre is deficient in glossiness, fineness, and 'colour.'" Streams, however, are not readily accessible everywhere, and therefore even where the cultivators are willing to have recourse to them, they are driven to the necessity of carrying on their operations in *bheels* and pools which happen to be close at hand.

101. In steeping the stalks in water, they are covered with a layer of refuse tops of the jute plants, or other jungly plants, or with clods of earth, sometimes with cow-dung, sometimes with the trunks of plantain trees, or logs of the date tree, and sometimes with straw smeared with mud. This is done partly with a view to protect the upper parts of the bundles from the action of the sun, and partly to keep the stalks sufficiently below the surface of the water, and also, it is believed, to hasten the process of rotting. In some places the bundles are at first sunk by the root end, which is harder, leaving the upper end exposed above the water, and then after ten or twelve days the upper end is pressed down to the same level with the root ends, so that the whole length of the stalks may rot uniformly. In some places, the bundles are turned over while steeping.

In Dinagore I find a singularly exceptional variation in one part of this process, mentioned by Baboo Khetter Mohun Sing, the manager of the Dinagore Rajah's estates. He says : "After the plants are cut and the leaves shaken off, they are collected into bundles and a mixture of dung and water being besprinkled over them, they are kept afloat for three days on the surface of the water."

I note this peculiarity both because Dinagore is the second largest jute-growing district in this province, and because Baboo Khetter Mohun Sing, from his special local opportunities, must have observed what he describes. I find, however, no mention of it in the district officer's report, nor the remotest allusion to it, either in the reports from other districts, or in the evidence of the agriculturists consulted by the Commission.

102. The duration of steeping is obviously regulated partly by the nature of the water used, that is, whether the water is of a stagnant pool, or of a running stream; and partly by the condition of the plant at the reaping time, that is, whether it was in flower when the parenchyma of the bark would be tender, or whether it was in seed, when the parenchyma would be hard. Much also depends upon the temperature of the water while the steeping lasts. It is generally admitted that under-steeping leaves runners and pieces of bark adhering to the fibre, which is found "to separate unequally and to stop chiefly at the small knots which appear on the stem;" thus causing the black specks so often seen in jute. These specks are also, but with less reason, attributed to the attacks of insects in Mymensing; to insects and to the fall of hailstones on the young plants, as also to the collision of the plants themselves in a gale, in Pubna; to the clods of earth placed upon the plants when steeping, to insects and lateral branches thrown out by the plants during heavy rains, as well as to under-steeping, in Rungpore; to under-steeping and attacks of insects in Goalparah; and to insufficient steeping in Backergunge. On the other hand, opinion is unanimous that over-steeping impairs the strength and flexibility of the jute fibre, and imparts to it a dull muddy colour.

The process of retting is said to take from two or three days to a month, thus :—

Furreedpore	.. ..	2 to 3 days.
Moorshedabad	.. ..	3 to 4 "
Bhaugulpore	.. ..	5 days.
Maunbhoom	.. ..	5 to 7 days.
Tirhoot	.. ..	} 6 to 7 "
Bancoorah	.. ..
Pooree	.. ..	} 6 to 10 "
Bungpore	.. ..
Goalparah	.. ..	7 or more "
Darjeeling	.. ..	7 to 8 "
Furreedpore	.. ..	} 7 to 10 "
Singbhoom	.. ..
Bakergunge	.. ..	} 7 to 15 "
Pubna	.. ..
Cachar	.. ..	8 to 10 "
Saikhera sub-division, 24-Pergunnahs	.. ..	} 8 to 10 "
Maldah	.. ..
Lohardugga	.. ..	8 to 14 "
Dacca	.. ..	8 to 15 "
Diamond Harbour sub-division, 24-Pergunnahs	.. ..	} 10 days.
Howrah	.. ..
Tipperah	.. ..	} 10 to 14 days.
Baraset sub-division, 24-Pergunnahs	.. ..
Jessore	.. ..	} 10 to 15 "
Burdwan (parts)	.. ..
Dinapore	.. ..	10 to 15 or 20 days.
Serampore sub-division	.. ..	} 11 to 12* days.
Hooghly	.. ..
Baraset sub-division (parts), 24-Pergunnahs	.. ..	12 to 25 "
Noacolly	.. ..	} 14 days.
Nowgong	.. ..
Bograh	.. ..	} 14 to 20 days.
Cooch Behar	.. ..
Rajshahye	.. ..	} 15 to 18 "
Bhaugulpore	.. ..
Barripore sub-division, 24-Pergunnahs	.. ..	} 15 to 20 "
Burdwan (parts)	.. ..
Julpigoree	.. ..	15 to 30 "
Bussorhaut sub-division, 24-Pergunnahs	.. ..	17 to 20 "
Mymensing	.. ..	} 20 days.
Hooghly	.. ..
Barripore sub-division (parts)	.. ..	} 20 to 25 days.
Diamond Harbour, 24-Pergunnahs	.. ..
Balasore	.. ..

103. While the bundles are under water they are examined from time to

Separation of the fibre.

time to test how far the rotting has progressed, and when the rotting has so far gone on that the fibres peel off readily, the bundles are taken out of the water and at once put in hand for the separation of the fibre according to the several methods prevailing in the different districts. In Singbhoom, Tirhoot, and Balasore, however, the stalks are first dried in the sun and then subjected to the next process.

104. The process of separation most generally followed is to beat or shake the stalks in the water in which it is steeped, till the glutinous substance in the bark is entirely washed away. The stalk is held indifferently either by the top or the butt end. The fibres, at first detach partially from the pulp, but by continued agitation in the water gradually disintegrate from it altogether.

Mr. Henly, formerly a merchant of Calcutta, gives the following graphic description of the process of separating the fibre in a letter to Dr. Royle:—

"The proper point being attained, the native operator, standing up to his middle in water, takes as many of the sticks in his hands as he can grasp,

* Plants cut in flower.

† Plants cut in seed.

and removing a small portion of the bark from the ends next the roots, and grasping them together, he strips off the whole with a little management, from end to end, without breaking either stem or fibre. Having prepared a certain quantity into this half-state, he next proceeds to wash off: this is done by taking a large handful; swinging it round his head he dashes it repeatedly against the surface of the water, drawing it through towards him, so as to wash off the impurities; then, with a dexterous throw he fans it out on the surface of the water, and carefully picks off all remaining black spots. It is now wrung out so as to remove as much water as possible, and then hung up on lines prepared on the spot, to dry in the sun."

I shall now describe the variations in this process where notable:

Pubna.—"The ryot," writes the sub-divisional officer at Serajgunge, "ascertains when maceration has taken place by occasionally trying selected plants. The process generally takes from ten to twenty days. When it is completed, the top of the stalk is broken with a mallet, and the wood snapped in the middle, when the fibre can be drawn out by the hand. One man can go through this process with about a hundred plants a day, extracting rather more than a maund of jute."

Mymensing.—"The fibres are," the Collector says, "those either picked off by hand without breaking the stem, or else they are separated by beating in the water in much the same way as a *dhobi* washes clothes."

Backergunge.—"After sufficient steeping the bundles "are opened. The cultivator then takes as many of the plants as he can conveniently hold by the top, and agitates them in the water as much as possible. By this process the glutinous portion of the bark is washed away. The plant is then broken at its thin or top end, and the pith pushed away by a sudden jerk from the top towards the bottom. The whole is then shaken in the water, and after this is done for some time, the fibres slip off the pith."

Furreedpore.—"The plants are steeped "till fermentation is well advanced, by which time the fibre gets loosened from the woody part of the stalks. It is then separated by the hand, and washed in water to dislodge the gum or resin in the fibre." But this description, by the District Superintendent of Police, does not touch upon a local modification of the ordinary process which came to our knowledge during the course of our inquiries in Furreedpore. We found that when the bark has well rotted the stalks are taken out of the water and carried home. Each stalk is then broken at a point about half a cubit above the root end. The fibre is first peeled off from the broken bit of stalk which is thrown aside, and with the help of filaments thus detached from the stalk the remaining fibre is gradually drawn away.

24-Pergunnahs.—"In the Baruipore sub-division "when fibres are ready for separation from the stems, a number of men are employed in separating and washing the jute, each of them being provided with a rod, with which he strikes the jute at the lower or fat end in order to have the fibres loosened from the stems, and then holding fast the loosened fibres, he gives some jerks to the bundles and thus effects the separation."

Chittagong.—"In this district the fibre is beaten off the stalk and heckled.

Boogra.—"Here the stalks are beaten down near the root end with a piece of stick, and the fibre then shaken off.

Julpigoree.—"After having soaked in this manner, they" (the stalks) "are brought to the surface, bundle by bundle, and the owner, or his servant, standing in the water, seizes the bundle at the smaller end (*i.e.*, top end of the plant) and bends double a portion of it about a foot in length; by doing this the inner stalks break, while the fibre outside, which by the action of the water has got detached from the stalks inside it, remains firm. The operator then takes the broken portion (*i.e.*, the foot length) firmly in both hands, holding thereby the fibre and the broken portions of the stalks. Keeping this portion in his hands, he allows the bundle to float straight before him in the water, and, by a series of steady jerking, pulls at the portions he holds, he gradually separates the whole length of fibre from the stalks, the fibre coming off from the stalks in the way a stocking does from the foot, if pulled from the toe. The whole length of the fibre

being thus detached, the bundle of long white stalk is thrown out on the dry land. Renewing the action and holding now the fibre only, and not the broken end, the fibre is easily pulled off the remaining broken bits of stalk."

Midnapore.—"When," writes the Collector, "the bark is easily separable, and the fibre becomes soft, * * * the stems are unbundled, taken up in handfuls, or as much as can be conveniently grasped in both hands, and beaten against the surface of the water, and thoroughly washed, so that they may be freed from all dirt and impurities. As each handful is thus washed, it is removed from water and left standing for an hour or so against a tree, hedge, or post, so as to allow the wet to drop off. The bundle is then broken at the top to the length of about half a cubit, and the wood being removed, a tuft of bark is set free, which is fastened to the roof of the thatch, to the door-frame, or to the branch of a tree. The women and children of the cultivator's family then set themselves about in pulling away the remaining wood from this hanging branch."

105. Generally the fibre is washed in water in which the stalks had been steeped. But the cleaner the water in which it is washed, and the more frequent the washings, the clearer and whiter becomes the fibre. Whenever readily accessible, running water is, therefore, always preferred for this process.

106. After washing, the fibre is dried in the sun from one day, as in the Baraset sub-division of the 24-Pergunnahs, to five days, as in Julpigoorce. In some parts of Hooghly, the fibre, after a day's exposure to the sun, is kept in the shade for two or three days, and then again exposed to the sun, and subsequently removed to the shade; but if the weather is wet or cloudy, the jute is exposed to dry on bamboo scaffoldings in the ryot's house. When dry, the fibre is made up into hanks and is then ready for the market.

107. From the local reports and from the other sources of information consulted by the Commission, I find that the cultivation of jute is confined to no particular class or caste of the rural population; all classes of agriculturists engage in it, irrespective of caste, and whether they be Hindus or Mussulmans.

"In Pubna jute is cultivated," the Collector says, "by rather more than half of the population of the Serajgunge sub-division, and about one-tenth of that of the head-quarters sub-district." Dr. McDonell, the Managing Director of the Serajgunge Jute Company, however, writes: "The cultivation of jute is * * * entirely confined to the Mussulman population, and so is its manufacture." But the result of our personal inquiries in and about Serajgunge did not bear out Dr. McDonell's statement.

108. This industry is said to occupy 1 in 66 out of a total population of 2,349,917 in *Mymensing*; about 10 per cent. of a population of 1,533,931 in *Tipperah*; two-thirds in the north and one-fourth in the south, out of 1,714,795 in *Purneah*; 6.29 per cent. of 689,467 in *Bogra*; about 10,000 out of 1,310,729 in *Rajshahye*; one out of ten among 1,488,556 in *Hooghly*; one-fifth of 532,565 in *Cooch Behar*; and one in ten out of 444,761 in *Goalparah*, where the cultivation at the foot of the hills is exclusively taken up by the Hajong and Koch tribes of hillmen.

In *Buckergunge* it is said to engage about 1 in 60 out of a population of 2,377,433; in *Hovurah* about one in every 60 of a population of 297,064; in *Jessore* about one-thirtieth out of 2,075,021; in the *Baraset* sub-division of the 24-Pergunnahs 5 per cent. out of a population of 279,303; and in the *Alipore* sub-division of the same district about one-third of a population of 630,736.

It is worthy of note, however, that the cultivators of jute are likewise the cultivators of other crops, and therefore the proportion to the total population as here shown would be misleading if accepted as an index to the exact number of men who find employment solely in the conduct of this department of industry.

109. The outturn of jute per beegah is very variable in the different districts, being so low as two maunds in Maldah and Singbhoom, and as high as ten maunds in Goalparah, 12 maunds in Nowgong, Bhaugulpore, and Pubna, and from 14 to 17 and even 20 maunds in Dinagepore. "The produce of the beegah," writes Dr. Roxburgh in 1808, "was 332 pounds." Mr. Gordon realized eight maunds of fibre for the first two years from the high lands, and seven regularly from the *chur* land. In Mymensing the Collector estimates that a beegah of land yields on an average about 43,200 plants, which may be taken to represent the produce, more or less, in other districts. The following statement exhibits at one view the yield of jute per beegah in the several districts and the prices of the fibre per maund, as given in the local reports, or ascertained by us during our local inquiries.

Statement showing the Outturn of Fibre per Beegah and the Price per Maund in 1872.

Districts.	Maunds.	Price per maund.		REMARKS.
		Rs. A.	Rs. A.	
Rungpore ..	.. 3 to 10	1 12	to 2 12	
Rajshahye ..	.. 4½ to 7			
Dinagepore ..	.. 8½ to 12½ or 15			
Pubna ..	.. 4 to 12	1 4	to 3 0	
Moorsheadabad ..	.. 3 to 6			
Maldah ..	.. 2 to 4			
Bogra ..	.. 5 to 10			
Sylhet ..	.. 5 to 6	1 8	to 2 0	
Cuolar ..	.. 6			
Mymensing ..	.. 8 to 9	1 8	to 2 0	per beegah.
Furreedpore ..	.. 5	0 12	to 2 6	
Backergungo ..	.. 10	0 8	to 1 2	
Dacca ..	.. 3 to 8	1 0	to 2 0	
Midnapore ..	.. 6			
Burdwan ..	.. 3 to 4	2 4	to 2 8	
Hooghly ..	.. 3 to 6 or 7	1 10	to 2 15	
Howrah ..	.. 4	2 8		
Maunbhoom ..	.. 2 to 2½	2 8		
Singbhoom ..	.. 2½ to 6½	2 4		
Bhaugulpore ..	.. 5 to 10	2 0		
Purneah ..	.. 6			
Southal Pergunnahs ..	.. 4 to 4½	2 0	to 2 8	
Tipperah ..	.. 4½ to 5			
Jessore ..	.. 5 to 7			
24-1 Pergunnahs {	Baraset ..	.. 5	2 0 to 2 8	
	Alipore ..	.. 4 to 5	1 2 to 2 4	
	Busseerhaut ..	.. 4 to 6		
	Barripore ..	.. 3	2 0 to 2 2	
	Diamond Harbour ..	.. 3		
	Satkheera ..	.. 4 to 4½		
Cuttack ..	.. 4 to 6			
Balasure ..	.. 3½			per beegah
Pooree ..	.. 1½	17 8*		
Nowgong ..	.. 6 to 12	2 8	to 5 0	
Luckhimpore ..	.. 3 to 4			
Julpigoree ..	.. 6			
Goalparah ..	.. 5 to 10	2 8	to 2 12	
Cooch Behar ..	.. 3 to 4			
Darjeeling ..	.. 4 to 5			

The above table gives an average of five maunds fourteen seers per beegah all round. This is, however, not a true index of the actual produce, the average being affected by the scanty produce of a large number of unfavorable districts. Taking the large jute-growing districts alone, the average would be about six maunds per beegah.

* Total cost of yield.

110. As a matter of course, the cost of cultivation must fluctuate considerably under different circumstances and in different places. Bearing in mind that almost universally

Cost of cultivation.

the cultivation, except in the case of a limited number of the easier class of ryots, is carried on by the ryots themselves and their families, and hired labour and hired ploughs and cattle are very rarely called into use, it must be evident that the exact out-of-pocket expense is no criterion of the actual cost. According to the reports furnished by local officers, it rises so high as Rs. 15 in Tipperah; Rs. 15 to 16 in Luckmipore; and Rs. 17 in Chittagong, and falls gradually from about Rs. 4 in Midnapore and Howrah to Rs. 3-10 in Burdwan; Rs. 3-8 to Re. 1-15 in Singbhoom; and to only Re. 1 in Maunbhoom. Mr. Gordon, who himself has grown jute for some years, incurred an expense of Rs. 2-13 per each maund of fibre (Appendix B, No. 21, p. xv).

These figures, therefore, as also those in the following statement, showing the cost of the cultivation and the preparation of the fibre in its different processes, must be accepted with reservation, as they represent rather what would be the cost if hired labour were employed, than the cost actually incurred. The statement is also incomplete under some heads, owing to the necessary details not having been furnished by the reporting officers.

I should point out here an arrangement whereby the necessity for employing hired labour is sometimes dispensed with in the metropolitan and eastern districts. In the jute-growing tracts the ryots frequently form themselves into associations on the principle of mutual co-operation, and without charge undertake by turns the cultivation of the field and the preparation of the fibre for each member of the guild. This practice is known as *gántá* in Pubna and in the metropolitan districts, and as *hamür*, *jogul*, or *hamürúllá* in Mymensing, where the "owner also sometimes lets out his land in *bargá* or *bhág*, i.e. in consideration of receiving a half share of the produce from the lessee of the land."

On these latter terms land is likewise let out in Goalparah, i.e. for a half share of the produce, which is there called *ádúrí*.

Indeed it is generally maintained that jute would not be remunerative if the labour employed in its cultivation and preparation were to be paid for.

The most important item of out-of-pocket expense is the rent of land. This varies greatly in the different jute-growing districts, rising from eight annas per beegah in some parts of the Furreedpore district to four rupees in Hooghly. The ordinary rate in the Baraset sub-division of the 24-Pergunnahs is Re. 1-8, and in Baruipore and other sub-divisions Rs. 2-8, which is likewise the rate current in Burdwan. In Bully, Otterparah, and other places, the rate, as above stated, is Rs. 4, and in the Serampore sub-division it is Rs. 3. In Dacca the ordinary rate is Re. 1-8; in Backergunge Rs. 2; in Mymensing from 10 annas to Re. 1; in Pubna Re. 1; and in Goalparah 15 annas. In Rungpore the rate varies in different parts from Re. 1 to Rs. 3. These rates are of course reckoned by the year, and in those places where two crops are annually raised from the same land, the amount chargeable to jute should be reduced one-half. In the same way where lands have to be left fallow for jute, the rates must be doubled. As the lands devoted to jute are included in the ryots old holdings, no special rate of rent for jute lands prevails anywhere. It is said, however, that in some parts of Hooghly the rates have been raised with reference to increased production attributable to jute.

111. The jute plant is utilized in this country in many ways besides being

Use of jute plant antidote to a weed.

used in the manufacture of its fibre. The plant is said to have "the remarkable effect of killing and eradicating a bulbous kind of grass known as * * * Bhadulia, * * * which spreads very rapidly and chokes the rice crop. The ryots * * * cultivate jute on the land where Bhadulia has appeared. * * The jute invariably kills the weed, and a little manure is then used to renovate the ground for the next crop of rice, which is pretty sure to be successful."

112. In the months of July and August large basketsful of jute leaves and tops of jute plants of both the green and the reddish varieties may every morning be seen carried on the heads of men and women from the suburbs to the

Use of jute leaves as a pot-herb.

Calcutta markets, where they are sold at pretty high prices for use as a pot-herb. In fact the *Pátsák* is a dainty of the season, and almost every native house has a dish made of it. The bitter variety is used in the form of a vegetable soup (*sukta*), which is esteemed as a stomachic. The bland, or sweet variety, is boiled, fried, or curried in different ways. Nor are the use of the leaves and the trade in it confined to Calcutta; they are used and sold in almost every part of Bengal, and in some places, for instance in Bancoorah and Beerbhoom, the plant is cultivated exclusively for sale as a pot-herb. The leaves of both the *Corchorus capsularis* and the *C. olitorius* are so used.

"In the sub-division of Cutwa in Burdwan," writes the sub-divisional officer, "there is a large *bheel* close to the village of Sreekhund, and in the marshy bed of this *bheel* jute is cultivated during the months of Fálguna and Chaitra. The leaves of this species of jute are very extensively used as pot-herb. The plants are cropped during the months of Vaishákha and Jaishtha, and so long as they are not destroyed by the rains setting in. This year, as the rainfall has been scanty, the leaves are being cropped even now. In ordinary years there are ten to twelve croppings, and the average price at which the whole produce of the *bheel* is sold is from Rs. 12 to Rs. 16."

The plant grown here is the red variety of the *Corchorus capsularis*, and Baboo Joykissen Mookerjee informs me that the cultivation of it extends over some 500 beegahs in the Hooghly district, the leaves selling at Rs. 20 to Rs. 28 for the produce of the beegah.

113. The leaves of both the green and the red jute plant hold also, as already stated (*ante* p. 13), an important place in the native pharmacopœia. An infusion of the dried leaves is used as a tonic bitter, and I think there is scarcely a Hindu house in which the *nálitá*, the name under which these dried leaves are known, is not to be found.

Do. as a manure.

114. Mr. Constantine, of Soobuncolly, in Mymensing (Appendix B, No. 6, p. v), says:—"The leaf of the jute plant manures the land;" and Mr. Porter, the Joint-Magistrate in charge of the Baraset sub-division of the 24-Pergunnahs, writes:—"Some say that the leaves of the plants which fall off and rot, serve as a manure and enrich the soil." In Nowgong the dried leaves, branches, and stems of the old plants that rot on the ground, are considered by the people as the best manure; but I have not heard of the leaves or any other part of the plant being collected or preserved for manure.

Uses of jute reeds.

115. In an economic point of view, the jute reed, when stripped of the bark, is as useful as the leaves, though in a different way. It serves for a cheap fuel to the ryot; it supplies sticks for the country-made matches known as *deásalái*; and it is employed as props and fencing for betel-leaf gardens. It takes a part also in the amusements of the people, being used as torches by the Hindus on the occasion of the Lucki Poojah festival. For this purpose large quantities of the reed are sold in small bundles in the month of October.

Price of reeds.

116. For fuel, fencing, and other requirements, the reed is sold at a cheap price, averaging about one rupee for the produce of a beegah; but at the time of the Kali Poojah it sells

at the rate of one pice for a small bundle of twenty to thirty sticks. It also brings in a good price from the manufacturers of the country matches.

117. The root of the jute plant is also valuable, and the Bally Paper Mills use yearly about 10,000 maunds of it in the manufacture of paper. It is also utilized as a manure

Uses of jute roots.

in Julpigoree.

118. Baboo Ramsunker Sen, the Statistical Deputy Collector of Jessore,

Uses of jute seeds.

says that "an oil for burning is extracted from the jute seed," and the refuse cake must, it is presumed, prove useful in fattening cattle, pigs and other live-stock. The *Gardener's Magazine*, quoted in the *Agricultural Gazette of India*, however, states that "the seed is of little or no value, yielding too little oil to make it worth while to crush, and it is not very nutritious for stock."

119. Having described the mode of cultivation of the jute plant and the processes followed in preparing its fibre, as well as the uses to which the plant is put, except its fibre, I come now to the question—whether or not this cultivation is injurious to the soil.

120. A strong majority of the district officers are decidedly of opinion that the cultivation of jute on the same land for a succession of years has the effect of exhausting the fertility of the soil.

Opinion in favour of exhaustion.

"Jute," says the Collector of Bogra, "tends to the decrease of other crops, destroying the fertility of the land in three or four years."

Mr. Nolan, the sub-divisional officer at Serajgunge, observes: "No pulses can be sown in the cold season on jute land, and even as the sole crop it exhausts the soil in two years."

So very injurious is the influence of this crop sometimes held to be, that the Collector of Rungpore reports that "jute is never grown for two years running on the same land;" and in pergunnahs Bahirbund and Bhiturbund it is grown "every second or third year by rotation."

The Magistrate of Jessore makes the following estimate of the extent of injury annually done to the soil by the cultivation of jute:—"The outturn is good in the first year, in the second it is about $\frac{1}{4}$ th less, while in the third it dwindles considerably."

Following up the same opinion, the sub-divisional officer at Barripore, in the 24-Pergunnahs, remarks: "jute impoverishes the soil. The soil is greatly exhausted by it, inasmuch as no land will bear a second or third crop unless it is carefully manured at each instance. Jute plant draws up the humidity of the soil, and destroys in a manner its productive quality of bearing other crops."

121. To this view, which is strongly supported by a large body of agriculturists, are opposed a small minority of District Officers.

Opinions against exhaustion.

For example: "Soil," writes the Collector of Dinagepore, "is rather improved than otherwise by jute cultivation, because it gets manured, which otherwise it would not be to such an extent."

According to the District Officer of Cooch Behar, with whose opinion the District Officer at Cachar coincides, "jute cultivation does not affect the soil injuriously;" but he adds—"manure is used to renovate the land."

"Jute," according to the local report from Furreedpore, "is not considered as exhausting the fertility of the soil, as shortly after its removal from the ground the field is again ploughed up and sown with one of the cold weather crops in this district. No manure is employed to renovate the land, the silt annually brought and deposited by the floods of the Ganges and Gorai rivers possessing abundantly fertilizing properties."

"Jute cultivation," Baboo Joykissen Moookerjee writes, "is said to improve the land for the cultivation of *neally* paddy and pulses."

"People say," writes the Collector of Purneah, "that jute impoverishes the soil, but a finer crop of mustard is often got from a field on which jute has grown than one on which other crops have grown. It does not exhaust the

soil."

"Being cut green before it is allowed to seed, it does not exhaust the soil."

Much in the same strain the Sub-Divisional Officer at Baraset, in the 24-Pergunnahs, observes—"It is a vexed question whether jute is an exhausting crop or not. Some say that jute leaves falling off and rotting serve as manure." Mr. Bowser says, "Tobacco, radishes, peas, and other leguminous crops, follow on lands where jute has been grown."

Mr. George, of Dacca, who has had very large experience of jute, says: "Jute cultivation does not, it appears, affect the soil to such a degree as sugarcane, for the same lands are used every year after removing it where sugarcane lands are used on alternate years, allowing one year to recover itself by letting it lie fallow, or by giving another crop. Another way of renovating the jute lands besides manuring them is by selecting such pieces of land as are likely to be submerged by the inundations in July and August, whereby the lands receive deposits of fertilising matter and recover from the exhausting effect."

But the most startling statement of all is made by the District Officer at Julpigoree. He says: "So far from the jute cultivation exhausting the soil, the longer it is sown on the same bit of land the more productive is the crop, and no jute sown on new lands come up to the jute grown year after year on the same spot."

122. It is a well-known law of nature that all plants are in one sense injurious to the soil, inasmuch as they cannot grow without abstracting some of its constituents, and thereby rendering it poorer than it originally was; and the jute plant forms no exception. After a careful and mature consideration of the local reports and of the evidence of the large body of agriculturists and experienced persons whom the Commission have personally consulted in the several jute-growing districts, I have no hesitation in saying that jute does more: generally speaking it exhausts and impoverishes the soil to a much greater extent than other crops. In the absence of a sufficient series of chemical analyses of jute soils under different conditions, before and after the raising of a jute crop, I am unable to say what are the particular constituents of the soil which it abstracts; but that it does abstract some of its constituents very largely is evident, from the necessity which agriculturists find themselves under of re-invigorating their fields with manure and fresh earth collected from drains and other places where vegetable and animal decomposition have deposited a rich layer of mould, or leaving them fallow for a time, or by a rotation of crops, the crops selected being such as are known by experience not to require the same soil as the jute. In the case of *churs*, *bheels*, and low lands, this artificial re-invigoration is not required, as the silt deposited by the overflow of rivers, the washings of the high lands brought down by rain water and deposited on low ground, and the enormous mass of vegetation which rot in *bheels*, effect by natural processes what the agriculturist on high lands has to accomplish by his own labour: but the necessity of supplying to the soil those constituents which the jute plant abstracts exists everywhere. Nor are the adverse opinions quoted above really opposed to this deduction; for it may be that in those places where the soil appears not to be exhausted, the rainfall and drainage are such as to obviate the necessity of artificial manure; or the soil there may be so rich in those particular constituents which promote the growth of the jute plant, that a succession of crops does not appreciably exhaust it; nay it may adapt the soil for the better growth of other crops. Positive answers on these questions must, however, await extensive chemical analyses and experiments of which I have not the benefit now.

123. As to the degree to which soil is exhausted by the cultivation of jute,

Extent of exhaustion.

I am disposed to concur with the Collector of Jessore that ordinarily even virgin land which has been broken up for a first crop of jute will, in the second year, lose about 25 per cent. of its productive power; and that even though afterwards heavily manured, its yield in the third year will be about one-half of the first year's

crop. It is from this conviction of the exhausting power of jute on soil that this crop is so frequently shifted from field to field; and I can testify from my own observation and inquiries that, except in the case of churs flooded annually, and very low lands which derive similar benefits by drainage, it is in a very few instances only that jute is grown on the same land for more than three years consecutively.

124. The exhaustion above referred to, where not remedied by nature, is

Remedies for exhaustion.

removed in three different ways: 1st, by the application of manures; 2nd, by rotation of crops; and

3rd, by leaving the land fallow for a time.

125. The manures ordinarily used are—in Dacca, cowdung and weeds from

Manures.

bheels; ashes in Dinagore; ashes, house-sweepings, oil-cake, and the ordure of cattle stalled in the fields in Rungpore; house-sweepings and oil-cake in Howrah; the cinders of the burnt roots of old jute plants in Julpigoori; and the stubble of the rice crops in Noakhally.

In Hooghly all lands for jute are not manured. But where oil-cake has been laid down for the potato crops, cowdung suffices for jute. According to soils, old mud from tanks, ponds and ditches, or cowdung, is used: oil-cake is put into the land only when it is of a very poor description. Sometimes the ryots pen in their fields sheep when being brought down for the Calcutta market, and the sheep's dung and urine have been found to act as an efficient manure.

In the 24-Pergunnahs cowdung, ashes, house-refuse, and fresh earth from tanks, ponds, and ditches, are put on land to be sown with jute.

Land requires to be manured with cowdung after two or three years in Goalparah. Here the ryot sometimes puts up his cowshed on the field on which he wishes to grow jute in the following year, shifting it at the time of cultivation to some other field next to be grown with jute, and strewing the cowdung and ashes over the land by way of manure. Indeed in most places where manure is largely used, the fields for the cultivation of jute are generally selected with reference to their nearness to the ryot's cowshed.

No manure is used in Moorshedabad, Purneah, Bhaugulpore, Darjeeling, Serajgunge, Backergunge, and Furreedpore, except in the Soopool sub-division of Bhaugulpore, where cowdung and house-refuse are largely employed. In Darjeeling the soil is mostly newly reclaimed, and needs no invigoration by artificial means, and in Backergunge and Furreedpore the periodical inundations render manuring unnecessary.

Mr. Constantine, of Soobuncolly, in Mymensing, affirms positively from personal experience, and Mr. Porter, the Joint-Magistrate in charge of the Baraset sub-division of the 24-Pergunnahs, states on hearsay authority, that the leaves of the jute plant falling off and rotting on the ground serve as a manure. In Nowgong also the dried leaves, branches, and stems of the old plants that rot on the ground are considered by the people as "the best manure." But in none of these places any manure is employed by the cultivators.

126. The most generally adopted method of renovating jute land is by a rotation of crops. It is practised in almost

Rotation.

every district where jute is extensively grown, and is well understood by cultivators, though there are no rules on the subject universally current in the country, each cultivator following whatever method appears most convenient to him. Different crops are sown in different seasons of the same year and for two or three years, or on alternate years, according to the caprice or the necessities of the cultivators, and then the jute is dropped for a year or two, when it will no longer grow to advantage.

The crops selected for rotation are, mustard or rice in Purneah; mustard, pulses, or rice in Rungpore; early paddy annually, or cereals every three years, in Rajshhaye; pulses in Moorshedabad; rice and mustard in Maldah; *janera*, *arhar*, and mustard in the Sonthal Pergunnahs; mustard in Goalparah; tobacco, rice, and mustard in Cooch Behar; tobacco or mustard in Jessore; mustard or onions in Tipperah; chillies, radish, and rice in Noakhally; *múehari*, *khesári*,

múg, and similar crops in Backergunge; cold weather crops, such as *kallái*, mustard, linseed, *sessámun*, *mason*, peas, *brinjal*, &c., in Furreedporé and Dacca.

The system of rotation observed in the following districts may be more appropriately stated in the terms of the local reports.

Sylhet.—"After the *nalái* plants are cut down, the lands are left fallow, for three or four months, and then when the lands are fertile enough, mustard, onions, brinjals, chillies or *mulá* crops are cultivated by rotation; but when the lands are poor and have become very much exhausted, they are left fallow for one or two years."

Pubna.—"Til and *dhán* are cultivated in rotation of jute. Jute is usually grown on the same land for two successive years, and it is then given up for other crops. Land in this district is too valuable to be let to recover its strength by lying fallow as in Rungpore and Bogra."

Dinagpore.—"The rotation of crops with jute is that where it is cultivated on *Polee* lands, mustard usually succeeds as cold weather crop, and in *Khíur* lands, Jeth or Bhadooree rice are cultivated alternately. In some instances if the jute crop is cut early enough, *hemunto* rice is put into the land."

Bogra.—"The jute is not cultivated on the same piece of land for more than two or at the most three years in succession. Mustard is frequently sown on the land after the jute crops are cut. The land is then sown with rice and other seeds for two or three years, when it regains its fertility and can then be sown with jute."

Midnapore.—"The rotation of crops practised in the Jungle Mehals is as follows:

"Jute, then (1) some sort of inferior grains, such as *kodo*, *kang*, &c.; or (2) *khomya* (a kind of cotton); or (3) sugarcane, and then jute again. In some other parts of the district—jute, then (1) *biri*, or some other kind of pulse; then (2) *aus* paddy or sugarcane, and jute again. But rotation of crops is not very generally practised in regard to the cultivation of jute in this district."

Hooghly.—"An inferior description of *aus* paddy, variously called the *kár-tiká*, *néalli*, &c., as well as the real *aus* paddy and pulses, are usually rotated with jute cultivation. The pulses form a second crop in the same year that the jute is sown; but when *aus* is alternated with jute it takes its place. It is in fact the *aus* paddy land on which jute is grown; owing to the difference of the two seasons respectively necessary for the jute crop and pulses, both the crops are grown on the same land within the year. In years in which jute is not cultivated on a certain land, it is cultivated with the *aus* paddy, and it usually depends on the nature of the demand and the price in the market for the ryots to choose whether to cultivate jute or paddy in a certain year." In some places indigo also is rotated with jute.

Howrah.—"One year *aus* paddy and next jute; though this rotation even is not always regularly carried out. Jute can be sown year after year on *chur* lands which are annually renewed." "Mustard, *kallái*, &c., are grown on jute lands after the jute has been cut."

Burdwan.—"After the jute has been cut, winter cereals, such as *kallái*, *músar*, mustard, peas, *kápis*, &c., are sown, but they cannot be said to be in rotation with jute. On the same land this plant is not grown for more than a year, as it exhausts the productive power of the soil. *Aus*, or sugarcane, which really takes the place of fallow, is sown in the next year in rotation."

Rotation is rarely resorted to in Mymensing; while in Julpigori, Darjeeling, in the Soopool sub-division of Bhaugulpore, and in the Busirhat sub-division of the 24-Pergunnahs, it is not practised at all.

127. The last method of renovation is by fallows. Here, again, there

Fallows.

is no rule or system of universal currency, it being resorted to whenever found expedient. In Mymensing jute lands are left fallow every third or fourth year; in parts of 24-Pergunnahs every second or third year; in Moorshedabad every fourth year; in Bhaugulpore every third year; in Sylhet occasionally; in Maumbhoom and Singbhoom two seasons fallow after a year of jute; in Nowgong every alternate year; and in Nuddea every second year in certain portions, and every second

or third year for two years after two or three jute seasons. It is perhaps unnecessary to add that the method of renovation by leaving the land fallow is but a counterpart of the natural process of renovation by inundations. *Suna* lands, which alone are subjected to this process, are too high to be reached by inundations, and have to be renovated by the washings of higher lands brought on them by the periodical rains, by the rotting of vegetable matter on them, and by certain mysterious chemical decomposition and disintegration which the soil undergoes by the sun-light and rain-water in course of time. These processes take place naturally everywhere; but on high lands they cannot reinvigorate the soil sufficiently for particular crops in less than two or three years, according to circumstances and the nature of the crops intended for them.

128. Among the various natural causes which are injurious to the jute crop,

Causes of injury to jute plants.

drought must be reckoned as the most important. The plants require a good supply of rain-water to wash and invigorate the leaves, and the land must be all along humid. If, owing to want of rain these conditions be not fulfilled, they must suffer in various ways. Generally their growth is checked, they become stunted, blight of some kind or other affects them, and the yield of fibre is reduced. If the drought is excessive, the plants sicken and die. On the other hand, excessive rain or inundation, submerging the plants, always kills them. Grown up plants do not, however, suffer if partially submerged to the extent of two or three feet of the stems. There is a tendency in such cases, however, of the submerged portion of the stem throwing out aerial roots and suckers which make the fibre "rooty." The plants are subject to other accidents of a serious character. We were told during our visit to the central and eastern districts that entire fields of jute had been destroyed by a kind of hairy caterpillar called *shûdpockâ*, which generally comes in seasons of drought and eats up the leaves and barks of the jute plants. The insect is known by different names in different districts; but the names by which it is most commonly described are *bichâ* and *ainchâ*.

129. Another equally destructive insect is the cricket, called differently *ûichingrâ*, *ûtrungâ*, or *ûrchongâ*, which burrows in the ground and either uproots the seedlings altogether, or destroys them by cutting away the roots.

130. In the Rungpore district (Appendix B, No. 33, p. xxiv), under the name of *chuttee*, we find mentioned, "a blight, which injures the plants during excessive rain when neck-high, drying up the leaves and thinning the stalk." I see also spoken of, in the 24-Pergunnahs, a "kind of blight which is prejudicial to the growth of jute. In the months of Ashâdha and Sravana, when the plants are breast-high, the leaves get crumpled up and the growth of the plants is checked."

131. During protracted droughts in Mymensing, the plants from want of moisture are visited by a blight called *kâchûrî*, when the leaves become warped and twisted, whereby the growth of the plant is at once stopped.

132. In cloudy weather, unattended with rain, destructive insects and caterpillars of various kinds are known to be produced; but we have not been able to collect any of these vermins.

133. The information collected in Calcutta by the late Mr. Anstruther and myself, before we started upon our tour in the jute districts, had inclined us at first to believe that jute had of late deteriorated in quality; accordingly, to ascertain the real state of the case, we not only invited the opinions of the district officers on it, but also made it a point of special inquiry at the places we visited.

134. Our first impressions of the subject, however, have been considerably modified. The majority of the district officers and the European traders and manufacturers whom we consulted are, with one or two exceptions, almost unanimously of opinion that the fibre has not of late deteriorated, and that the ryots have not been reckless in the selection of the land on which it is cultivated.

Dacca.—The Collector does not think that land is selected recklessly, "nor is of opinion that the jute plant is deteriorating."

Mymensing.—The Collector does not know how the quality of the jute is deteriorating, "nor that it can be said that the cultivators have been reckless in selecting the land on which to grow the plant."

Dinagopore.—"Jute is not deteriorating from the present system of cultivation," and "I," says the Collector, "do not consider that the cultivators have been reckless in selecting the land on which to grow jute."

Bogra.—"It does not appear that jute is deteriorating under the present system of cultivation, and cultivators are careful in the selection of their land."

Rajshahye.—"The quality of jute has not deteriorated," and "reckless and indiscriminate sowing is not resorted to."

Pubna.—"The quality of the plants," writes the Collector, "is not believed to be deteriorating from the present system of cultivation, and its fall in prices is to be attributed to the extension of cultivation, and consequently to the large outturn of jute, rather than to any deterioration in the quality of the fibre."

Tipperah.—"There has been no change one way or the other in the quality of the fibre in this district." "I do not consider," adds the Collector, "that land has been recklessly selected. Native agriculturists are very long-headed in such matters."

Julpigorec.—"The Deputy Commissioner, who terms Julpigorec "essentially a jute-growing district," says "no" to the question whether jute has deteriorated, and adds, "the cultivators seem thoroughly to understand what they are about."

Naoghly.—"The ryots are not reckless in selecting jute lands," and the Collector does not think "that the quality of jute is deteriorating of late."

24-*Pergumals.*—In the Baraset and Sudder sub-divisions "jute does not seem to have been deteriorating in quality."

Purneah.—The Collector of this district is also of the same opinion.

Dr. McDonnell, Managing Director of the Serajgunge Jute Mills, observes: "I do not admit that the Serajgunge jute is inferior to what it was three or four years ago. I am inclined to think (and I see a great deal of jute every day in the Serajgunge bazar) that the quality has rather improved than otherwise. I hold this opinion in opposition to the Calcutta price-currents. But I would urge that goods in a falling market are often depreciated and found fault with; while were the market brisk and the demand good, we should hear no remark as to quality."

Mr. Gordon, Superintendent of the Gouripore Mills, in his statement says: "I think the jute is not as a rule deteriorating in quality." (Appendix B, No. 21, p. xv). Mr. Thornton states: "The quality has not been gradually deteriorating." (Appendix B, No. 40, p. xxix). Mr. George observes: "I do not find that jute has deteriorated; indeed this year I think it is if anything better, but it varies in different districts." (Appendix B, No. 42, p. xxx.)

135. On the other side of the question I shall reproduce the opinions of, or refer to, the authorities most entitled to consideration.

Sylhet.—In this district, where the cultivation is almost nominal, the present system is stated to have caused a deterioration in the quality of jute; but the defects of system to which this deterioration is due are not instanced.

Rungpore.—The only officer of a large jute district who holds that jute has deteriorated is the Collector of Rungpore. Mr. Glazier writes: "It is generally considered that the quality is deteriorating. Most of the land in which it is grown is too poor to produce plants strong enough to stand the steeping; so that the fibre becomes rotten before it is sufficiently steeped." But the Superintendent of Mahārāni Sarnamayī's estates in the same district says that the "cultivators are not reckless in selecting the land on which to grow the plants."

Furzedpore.—The Collector of this district, where also jute is largely grown, makes a guarded statement without committing himself to any decided

opinion. He says: "The fibre of the jute and other plants is reported to deteriorate in consequence of the rough process adopted to separate it from the woody matter."

Mr. David and Baboo Modun Muhun Bysack, of Dacca, Mr. Constantine of Soobuncolly in Mymensing, Baboos Khetter Mohun Bose and Nolit Mohun Das of Calcutta, whose opinions on this special subject carry weight with them, as well as almost all the *daridars* and traders with whom we have conferred, also hold that the quality of jute has deteriorated of late.

136. Without siding with either party, I believe I am justified in inferring that in proportion to the increase of the cultivation the quantity of medium and inferior

Allegation admitted—its causes.

jute has been greater season after season. When the demand is great and the prices high, as they have been for some time, people find a ready market for whatever they can produce, and naturally become careless; whereas a glutted market leads to the rejection of inferior articles, and consequently cultivators are driven to the necessity of care in improving the quality of their goods. This was well illustrated last year, when, with a glutted market, the demand was much less than the supply, and the demand which did exist was chiefly for fibre of the best quality, and good deal of it was sold at a cheap rate.

137. Like the hemp-growing Russian peasant of olden times, the ryot of Bengal raises his rice and other crops with his own hands, aided only by the members of his family, and it is rarely that even an agriculturist in easy circumstances employs hired labour. When his own family is underhanded, he has recourse to the system of mutual co-operation which I have already described as prevailing in some districts (*ante* p. 37), and under it the cultivation is carried on without any actual outlay of money for labour. By this means he can grow a crop with little expense; and even rice, the staple produce of the country, will not be remunerative to him unless so grown. As long, therefore, as the ryot keeps within limits, that is within the working power of himself and his family, so long will the produce continue to be fair. When, however, he oversteps those limits and attempts to do more than he is personally able, without incurring the necessary expense, the cultivation is not duly cared for, and some portion at least of the produce necessarily becomes of inferior quality.

138. Here and there some intelligent ryots may be found who try to avoid such mistakes. At Goberdhone (in Rungpore) a few ryots said to me when I was there: "We do not, as a rule, grow jute on more than two or three dones, but we produce good fibre. If we extend our fields, we will not be able to pay that attention to the cultivation of the plant and the preparation of the fibre so absolutely required for the production of a good quality of jute."

General probity of the ryots.

The cultivator is, as stated in the local reports, generally careful in selecting the land whereon to grow jute; but a careful selection of land is not alone sufficient to secure a supply of good fibre. It is on the timely harvesting of the crop, the sufficient steeping of the stalks, and the careful dressing of the fibre, that the superior quality of the produce in a great measure depends; but it is almost equally necessary that the rainfall while the crop is on the ground should not only be sufficient, but also seasonable.

139. The high prices of the season 1871-72 threw the ryot off his guard, and forgetting his habitual caution he extended the area of his cultivation beyond the limits of his working power. Just at the time, too, when the jute had to be harvested and steeped, he was busy both in reaping the crops of *aus* rice and *kaon*, as well as in preparing to sow the *aman* paddy. His attention being thus divided, the jute crop was neglected; for even the ryot who could afford to pay found it rather difficult to procure hired labour, especially in a season when not only is labour more constantly and largely in requisition, but when it is also to a great extent crippled by the sickness then so widely prevalent. The result was a crop of inferior quality.

Causes of inferior jute of 1871-72.

140. It has also been said to us by a majority of the jute-growers that at the sowing season the *fareahs* or *paikars* some times bargain anticipatively for the produce of the crop without making any stipulations as to the quality of the fibre, so long as it is delivered to them at an average price previously agreed upon. Thus these men in a manner offer a premium on the growth of inferior produce by encouraging the ryot to be less careful as to the quality than to the quantity of the fibre he brings to the market. Carelessness in tying the jute into bundles or drums before it is perfectly dry also causes much deterioration.

141. There are, however, many causes for the deterioration of jute, irrespective of care on the part of cultivators. Even after taking every precaution, a ryot may become perfectly helpless if the rainfall happened to be insufficient or unseasonable. Last year, as already observed, there was precisely this last difficulty to contend against. According to the Meteorological Reporter for Bengal, the rains in most parts of these provinces were unusually light in 1872. Lower Bengal suffered from a deficiency of rain in every month of the year, and with an extended area of cultivation a large portion of the fibre necessarily turned out to be of medium and inferior quality. Again excessive rain, by driving the agriculturist to reap his crop before it is mature, leads to much deterioration. The plants on low lands being in imminent danger of being drowned, the alternative is either forsaking the entire crop, or by cutting early to secure a crop of inferior quality; self-interest allows no room for hesitation as to which branch of the alternative to accept. In short, with a large area of cultivation over a very wide tract of country, on lands of very dissimilar character, and under very different circumstances, the influx of a large quantity of inferior jute into the market cannot be prevented, and its measure must increase *pari passu* with the extension of the enterprise. I must add, however, that there is nothing to show that there has been *in se* any deterioration in the character of the jute plant, or any universal falling off in the quality of its fibre. There is much truth in what Dr. McDonell says of purchasers becoming hard to please in a glutted market to explain the reason of the complaint lately raised in Calcutta on the subject.

142. I now proceed to make a few remarks on the present system of cultivating and preparing jute, and to indicate in what directions it is susceptible of improvement.

Most of the district officers and private gentlemen who have written on the subject have suggested no improvements under either head of the subject, being apparently disposed to leave the existing state of things undisturbed. The Bengal peasantry, fondly attached to old customs and traditions, are averse to any innovation on their customary and traditional modes of cultivation and manufacture; and it is needless therefore to say that the Commission have received no help from them, though they would of all others most largely benefit by improvement.

143. The directions in which improvements may be easily and most beneficially effected are—(1) selection of seed, (2) rotation of crops and observance of fallows, and (3) care and attention in the season of reaping, and in the subsequent manipulation of the fibre.

144. It is, I believe, sufficiently well known to the peasantry that soil intended for the jute crop must be well manured, ploughed, cleaned, and pulverized before it is sown; but I do not think it is known that seed from well-grown plants produce a much better crop than those from weak, ill-grown, and unhealthy plants, and that a change of seeds, and seeds brought from distant fields, are likely to lead to improvement in the plant. Dr. J. Fleming, the then Inspector of Drugs, in a letter to the Secretary to the Board of Trade, in 1808, speaking of the *sunni* fibre, observes:—“At Salsette, where it would appear *sunni* of the best quality in Hindustan is produced, the ryots never sow their own seeds, but procure every year a fresh supply for that purpose from the Mahratta

country or from the Malabar Coast." And what is true of sunn is equally so as regards jute. A careful selection of well-grown plants for seed and the use of the best seed alone for cultivation might, I think, be inculcated as a first step in advance of the present system; and it might be pointed out to agriculturists that an exchange of seeds between different districts might also be tried, with the certainty of improvement in the quality of the fibre. On this subject Dr. McDonell, the Managing Director of the Serajgunge Jute Company, writes:—"No doubt a supply of good seed would be a desideratum, and some means, might be devised to this end, for it presents no great difficulty to establish depôts for the reception and disposal of the best jute seed, as I believe is done for cotton."

145. Moreover, as jute is conceded on almost all hands to be an exhausting crop, no high lands should be planted with it oftener than once in two or even three years.

Fallows.

That the productive powers of jute land have been generally over-taxed, is evident from the fact that of late more inferior fibre has been brought to the market than formerly, much of which must have been grown on exhausted soil. There is considerable difficulty, however, in carrying out a system of regular fallows at stated periods. The ryot cannot always afford to pay rent for fallow lands, and the prospect of recouping two or three years' rent by the sale of one year's good crop is subject to so many contingencies, natural, commercial, and domestic, that few like to accept it. There is besides at present a great demand for arable land for a variety of crops, and few can afford to forego present opportunity for a future contingency. In the case of many ryots, a failure of crops on their best lands after a two years' fallow would be tantamount to death by starvation, even if they could live during the fallow period on the mercy of the mahajun.

146. I observe that much fault has been found with the present method of harvesting the jute crop. In the early days of *sunn* cultivation, it seems to have been the practice to reap the plants when mature, or approaching maturity. In a despatch of the Secret Committee of the Court of Directors to the Government of India, dated 4th December 1800, I find it stated:—"When the seed is nearly ripe the plant must be pulled up." Mr. Frushard, writing to the late Board of Trade, in July 1802, says:—"The French professors particularly warn us against gathering of the plant before it be quite ripe when intended for cordage; for, say they, it never lasts, so long as that made from plant that hath been suffered to attain to perfect maturity." Touching this point Dr. Roxburgh, in a memorandum addressed, in October 1808, to the then Chief Secretary to the Government, writes:—

"It was pulled on the 23rd of August, when the seed was ripe, at which period the fibre is reckoned strongest, though of harsher texture than when in flower." To the same effect is a report by the Sub-export Warehouse-keeper, dated the 3rd October 1808, to the Secretary to the Board of Trade, where Mr. Larkins observes: "I have invariably found *pucka sunn*, produced from a plant which has not been cut until the seed has ripened upon it, to possess greater strength of fibre than the *phool* or flower *sunn*." Dr. Fleming, in the letter already quoted from above, observes: "Little or no loss will be incurred for the *pucka sunn* as it is called, or that which is pulled after the seed has come to maturity, is of equal value with *phool sunn*, or that which is gathered when the plant is in blossom. The former is coarser than the latter, but stronger and fitter for cordage, though not so well suited for canvas."

The above remarks made upon the culture of sunn (*Crotalaria juncea*) are equally and in every way applicable to the cultivation of jute. Dr. Fleming, writing upon the subject in 1801, in the form of questions and answers, asks: "How is the *put* prepared?" and answers, "exactly in the same manner as the sunn. The mode of preparing it is liable to the same objections as that used by the natives for making the sunn, and the improvements recommended in regard to the latter would be found equally useful for this plant."

147. Inferring from analogy, I should say that jute for cordage ought to

Distinctions to be observed with reference to fibre required for cordage and that for canvas.

be cut in seed, but for other purposes, such as the manufacture of gunny, carpet, &c., it should be reaped in flower. The latter description of fibre is not weak, while it is soft to the feel, and silky in appearance. Mr. Gordon, the Superintendent of the Gouripore Mills, cut his jute in flower, and the same practice is followed by a large body of jute-growers, as will be seen from their statements appended to this report.

The same gentleman, in a paper which he has written on the cultivation of jute, says: "And too much importance cannot be placed upon the facts that the cutting of the jute at the proper time in a great measure determines its quality. If cut when the plant has just reached its full growth and the flowers begin to appear, the fibre will be strong, soft, and free from hard root, which is so objectionable; on the other hand, if allowed to stand until decay has set in, the fibre will be hard and of a brown colour, and no amount of care in the steeping will remedy this. No proper tanks are provided for steeping in; any small hole or ditch by the road side is used for a time; these do well enough, but quantity after quantity is steeped in the same water, it gets so dirty that fibre steeped in it becomes discoloured and weak."

148. The question next arises whether the stalks should be steeped in

Stalking before steeping.

water at once, or after a previous stacking. Dr. Buchanan, after referring to the extensive manufacture of a very coarse but strong sack-cloth from the fibre of the *Crotalaria juncea* at Bangalore, remarks: "The plants after being cut down are spread out to the sun and dried." Dr. Roxburgh, in a letter to Government, dated the 20th April, 1808, describes the results of certain experiments made by him in these terms: "On the 22nd February last, when the plants were vigorous and in full blossom, twenty pretty large bundles were pulled and managed as follows, with the view of ascertaining whether during the dry season drying the plant previous to steeping it, as formerly recommended to this Government by Dr. Fleming, adds strength to the clear fibre, which the accompanying samples tend to confirm, and it is chiefly with this view that I have taken the liberty of troubling Government with them." Dr. Fleming, in his paper noticed before, remarks: "Instead of putting the plants into water immediately after they are pulled up, they should first dry them in the sun for two days, after which they should steep them."

This practice of drying the stalks for two days before steeping is, as the statements of several agriculturists show, very common in the 24th Pergunnahs, Hooghly, Burdwan, parts of Rungpore, and in other places in Bengal. It might, I think, with advantage be more generally followed, as calculated to conduce to the strength of the fibre.

149. The Statistical Deputy Collector of Jessore suggests that, after

Jute mill.

cutting, the stalks "should be passed through a mill formed like the native *kurki*, used in pressing the juice of the sugarcane, and after they had been broken up, the loosened fibre should be steeped in brick-made tanks like the indigo vats, specially made for that purpose, and should be bleached as soon as the bark comes off easily and separates itself from the stalks. This would most probably render the fibre stronger." There are, however, serious disadvantages to this process being adopted by the ryots. In the first place the injury to the stalks will entail loss; secondly, to hire the labour of pressing the stalks under rollers, and the cost and trouble of separating the broken particles of the stalks from the fibre, which will in course of the process remain adhering to it, thereby making it woody, will add considerably to the cost of production; and it is doubtful if the improved quality of the fibre and the consequent enhancement of its price will cover the outlay. Mr. David, of Dacca, in a letter to the Commissioner of Dacca, agent a system of model jute farm, has struck upon a similar idea, when suggesting that the plants should be steeped in indigo vats. But he, however, has not shown that the cost of frequent pumping of large

quantities of water to fill up the vats, and the interest on the first outlay for building extensive series of vats, can be covered by the expected improvement in the quality of the fibre. What is quite unfelt in a high-priced article like indigo, would be a serious drawback on a low-priced staple like jute.

150. In regard to the retting process, I must, in justice to the Bengali peasant, observe that he is often obliged to allow the plants to remain steeping longer than the requisite time, sometimes from want of labour, sometimes from sickness, sometimes from the more pressing demands of other crops, and sometimes also from the inclemency of weather, as a ryot with a small hut does not like to prepare the fibre on a rainy day, when he would be unable to dry it properly. In such cases the stalks are oversteeped, and the fibre thereby loses strength and colour. On this point Dr. Fleming writes: "For this no precise rule can be laid down, as the length of time for steeping must vary according to the temperature of the weather and the quality and quantity of water that is employed." Again, "The only general rule that can be given is that the plants should be taken out of the water as soon as it is found that the fibre or bark can be easily separated."

151. As to the water to be made use of in steeping jute, Mr. James Frushard, writing in 1801, remarks, that "the plants will be sooner steeped in standing water than in a running stream, and sooner in stagnant, putrifying water than in one that is clear; but that the clear standing water is nevertheless to be preferred." The jute-growers in Bengal, as will be seen from their statements, are already guided by these considerations in their choice of water, and whenever possible they always steep the jute stalks either in the still gulfs or pools of a river or in *beel* water. The difficulties to be overcome under this head have already been referred to in paragraph 141.

152. The operation of separating the fibre is effected by the majority of ryots by shakes and jerks in the water, but both Dr. Fleming and Dr. Roxburgh are against this method. The former gentleman says:—"I am unwilling to give up altogether the mode of peeling by the hand, as I find it strongly recommended in a letter from the Lords of the Privy Council to the Court of Directors, dated the 6th of February 1803, in which it is alleged that the *sunni* prepared by peeling is likely to excel materially in strength that in which the fibre is dislodged from its natural situation." Dr. Roxburgh, writing in 1808, says:—"For peeling less steeping seems to be necessary than for separating the fibre after the Bengal modes, and in the former case they are less entangled, and give more support to each other than in the latter." This method is also familiar to some of the jute districts, and the Commission found it actually practised in parts of Mymensing and in Backergunge and Furreedpore. The fibre, when peeled off, is certainly less towy, and it would, I think, be better if this mode were generally adopted throughout the jute tracts in these provinces.

153. But whatever care and attention may be previously bestowed in the cultivation of the plant and the preparation of the fibre, all will have been utterly thrown away if the jute be not thoroughly dried before it is made up into skeins; and, guided by what I have heard, I certainly think that the wet state in which the fibre, either from the ryot's carelessness, or his wish to increase the weight of the fibre, is too often tied up, may be safely accepted as one of the principal causes of that inferiority in its quality which has been so much remarked upon of late.

154. The Collector of Furreedpore suggests a factory system of manufacturing. He says:—"As a rule (jute) is cultivated by men of very small means, none of whom possess the necessary capital to purchase any kind of machinery. If, however, a sufficient margin of profit would be gained by bringing a better article into the market, European enterprise should be available to set up the required machinery. The raw plant could be purchased of the ryot, and be

manipulated in a factory, and if a mark was adopted as is done with silk and indigo, the product would, without doubt, reimburse any speculator who was in a position to attempt to manufacture in a tract which so abound with all kinds of fibrous plants as this district." But, as stated in paragraph 149, it is doubtful if the improvement in the quality will be such as to cover factory wages for work which is done by the cultivator as a leisure-hour occupation, without incurring any out-of-pocket expense.

155. The employment of machinery for the separation of fibre cheaply and effectually would doubtless be very desirable, and it would be worth the while of Government to offer premia for machines for the purpose. The primary conditions which a machine for the purpose is to fulfil are—1st, that it must be so cheap that it would be within the reach of the bulk of the cultivators of this country; 2nd, it must be so easily worked that ryots of ordinary intelligence should be able to use it; and, 3rd, it must be so simple that any village smith should be able to put it to order when required. Such a machine would effect a radical change for the better in the present rude and defective process of separating the fibre. The American Rannie machine is said to be very effectual in separating the fibre of jute from its stalks; but I am not aware of the cost of the machine. Unless its cost be so low as to bring the machine within the reach of ordinary cultivators, it would prove unavailing, as paid factory-labour in large establishments will not be able to compete with the private enterprise of cultivators who devote their leisure hours to the undertaking, but who would not, and could not tender such leisure to factors.

156. All improvements and changes imply greater outlay of labour and capital than what are now devoted to the enterprise, and they will never be risked as long as the ryot does not find that the price of his produce will be regulated by its quality alone; that the best quality will command the highest price; and that inferior fibre will prove the least remunerative to him. Something may be done by diffusing information as to what alterations and changes in the present modes of cultivation and of manufacture are likely to improve the quality of jute; but the only demonstration which will really lead to the general adoption of improved methods of cultivation and manipulation is profit. As long as it cannot be shown clearly that improvement in quality will lead invariably to higher profits, the cultivator will never abandon the process which, without any appreciable strain on his resource of capital and labour, now brings him such large returns. I cannot better illustrate this than by reference to the extension of the trade in jute in this country. As already shewn in paragraph 46, jute has been grown in India from about, or before, the time of the Mahābhārat; and doubtless a pretty large quantity of the fibre was produced in the seventeenth and the eighteenth centuries, both for home consumption and for gunnies for the packing of articles for exportation; probably also for the manufacture of cordage in the different roperies adverted to in paragraph 55. But the raw material was never exported. Trial shipments of the fibre were first made in the tenth decade of the last century, and though these were very favorably noticed (para. 55), and laid the foundation for a lucrative foreign trade, no systematic, nor any material, aid was given to it by Government, and the exports languished from that time to the close of the third decade of this century. From Appendix H, page lxiv, it will be seen that the total export in 1828-29 came up to only 364 cwt., and valued at Rs. 620-14-9. I have no returns at hand for previous years, but I have no reason to believe that the export of the fibre in any previous year was at all great. From 1828-29 the trade in the fibre seems to have gone on rising very steadily. At the close of the first five years from that date the export rose to 25,333 cwt. In the next five, the average was 67,483 cwt. The next quinquennial average was nearly double of the preceding one (117,047½ cwt.), and it doubled again in 1843-44 to 1847-48 (234,055½ cwt.) This steady increase in the production of the fibre was effected solely by the energy of the ryots, without

any extraneous aid whatever. He found the occupation profitable, and he engaged in it with alacrity, devoting his own land, time and capital to a cultivation which he understood thoroughly, and which he found always brought him a fair return. The fibre was gradually better and better known by the manufacturers in England, and as the demand rose, so did the supply. The superior quality of Russian flax, and its moderate price at the time was, however, a serious impediment in the extension of the jute trade, even if it had been, which it certainly was not, well known to manufacturers. Few would seek the jute fibre in distant India who could get the superior Russian flax at about the same price so much nearer home. The Russian war of 1854-55 upset this state of things. The importation of flax was stopped, and English manufacturers were driven to the necessity of finding a substitute, and jute at this juncture appeared the most promising. It was nearly as good as flax in quality; it was cheaper, and it was grown in a dependency of the British Crown, where it could be cultivated to any extent desirable. The stocks in the market were bought up at high prices, and the demand for the fibre in Bengal was brisk. The ryot perceived his opportunity, and seized it of his own accord, without any prompting or aid worth the name. He kept up the supply to the full extent of the demand, and the average of export rose from 969,724 cwt. in 1858-59 to 1862-63, 2,628,110 cwt. in 1863-64 to 1867-68, or nearly three-fold more than that of the preceding five years, or over eight times more than the supply of the year before the breaking out of the Russian war. The total value of this export was Rs. 6,12,95,929. The last quinquennial average was 48,58,162 cwt., valued at Rs. 3,01,00,223. The period from 1828-29 to 1872-73 is just forty-five years, and the trade has risen during that period from 364 cwt., valued at Rs. 620 in 1828-29, to 7,255,689 cwt., valued at Rs. 4,23,49,620 in 1872-73. It is usual with some to descant on the apathy, ignorance, and want of enterprise of the people of this country generally, and of the ryots in particular; but the figures here given prove beyond the shadow of a cavil that they are, notwithstanding their real and alleged defects, sufficiently long-headed thoroughly to understand their interests, and capable of creating and extending an industry in five and forty years to the value of nearly four and a quarter millions pound sterling, without any aid whatever from without. That they are capable, likewise, of sustaining this trade and extending it, if required, and made worth their while, none will, I feel certain, venture to question. As long as the trade will be profitable they will do all that is needed; but strong common sense and long-headedness will not accept theories for facts, nor adopt new methods and systems because they are new, or because they are told to adopt them. The new methods and systems must be proved to be real improvements, calculated for certain to add to their profits, or they will have none of them. To illustrate this subject further, I may here also advert to a fact which is of much moment. The high prices and heavy demands for jute in 1871-72 were quite sufficient to induce the ryot, in the following year, to increase the area of his cultivation by about 30 per cent. over that of the preceding year; but his customers failed to respond to his enterprise. The purchasers fell back, the prices fell, and the market was glutted; as a necessary consequence the ryot was a heavy loser, and he at once reduced the area of his cultivation from about 925,899 acres in 1872 to nearly 517,107 acres in 1873. In short, the best and only incentive to the extension of the jute trade is, as in all other cases, profit; and as long as European manufacturers will keep it up by a steady demand at remunerative prices, so long there will be regular improvements, both in the quality and quantity of the supply; but sudden and heavy falls in prices will tell seriously against both.

157. The influence of the jute cultivation on the country and the population is variously described in the local reports.

Influence of cultivation on the condition of the people.

In the Sonthal Pergunnahs, Maldah, Howrah, and Bhaugulpore, the cultivation, being limited to supply only the local demand for the fibre, has produced no marked influence on the country, the people, or the production of food-grains.

In Purneah.—"The cultivation of jute," it is said, "has had a most beneficial effect both on the people and the soil. It is in many respects like indigo: it can be grown with advantage upon land, which, after it has been reaped, can be sown with mustard, and in some cases with rice, &c." "I do not think," adds the Collector of the district, "the cultivation has had the effect of decreasing the amount of cereals or other crops grown, but has simply been the cause of more land being brought under cultivation."

In Julpigori.—"The cultivation has operated beneficially. It brings money into the country and betters the condition of the inhabitants. Although cultivation of jute increases, cultivation of other crops does not decrease, as is obvious from the fact that much high land still lies fallow."

In Cooch Behar.—"The cultivation of jute contributes to the prosperity of the country and population. It has not affected the production of the necessary amount of cereals," &c.

In the Darjeeling District.—"The soil being rich and fertile, the growth has no effect whatever on the production of cereals, &c. The profit they (the cultivators) make in jute is clear gain."

In the 24-Pergunnahs.—"The indiscriminate cultivation of jute in the Baraset sub-division is said to enrich the ryots who grow the crop, and the *paikars* and *mahajans* through whose hands the fibre passes."

In the Alipore Division.—"It does not appear that the cultivation of jute, as it at present exists, affects the country and population materially, &c. Owing to the increase of jute cultivation, the cultivation of *biri rohi*, one of the important cereals, has become neglected."

In the Bussirhat Sub-division.—"The cultivation is carried on advantageously in a pecuniary point: cereals less produced."

In the Salkhira Sub-division.—"Rice is not affected by jute cultivation, which is a paying crop, being neither expensive, nor troublesome, nor precarious." "The condition of the jute cultivators has decidedly improved; indeed up to a certain point the condition of the people must necessarily improve as the market prices of food-grains will rise. No less land is used for food grains; of course there is a limit to the extension of this advantage: whether that would ever be reached depends on Europe, not on us. Food-grain cultivation, necessarily decreases as cultivation spreads."

Dacca.—"The Collector considers "the effect of the rise of the jute cultivation is an unmixed benefit to the people, provided it is not carried to excess; but again this works its own cure, and there is a reaction as there is this year. So long as a man keeps within the limits of the working power of his family and servants, his jute crop is so much cash in his pocket, and I attribute a very great deal of the prosperity of the cultivating class here to the influx of hard cash in return for jute."

Backergunge.—"In 1871 cultivators as a body acquired a good deal of money by the sale of jute, as the price ruled enormously high. Last year the loss sustained by them has been more than proportionate, the price realized being not even just sufficient to cover the expenses incurred in the production. The cultivation has not yet been carried to any such extent as to affect materially either the country or the people in general, or the production of the necessary amount of cereals, &c."

Furzedpore.—"The extension of jute cultivation has, it appears, only affected the production of the *aus* paddy, which has decreased in proportion; it has not in any way injuriously affected the country or population, the profits arising from jute cultivation being to some extent spent on purchasing grain from surplus-producing districts."

Mymensing.—"In an economic point of view, jute has been an immense boon to the inhabitants of Mymensing. It has enabled them to utilize lands which were previously of little value, and it has poured silver into the district till the great bulk of the people are decidedly raised above a condition of poverty. At the same time, I am not of opinion that the production of cereals has been diminished to any appreciable extent, if indeed it has been diminished at all. I am sensible of the difficulty of applying abstract rules of political

economy to, the state of things around us in India; but the following points may be noticed as bearing on this part of the question:—*1st*, the price of rice has not risen in the last four years; *2nd*, even if the price of rice had risen somewhat, this would have been sufficiently accounted for by the rise of price which would naturally follow the influx of silver rising from the sale of jute; *3rd*, as, in spite of this, rice has not risen, it follows that rice cultivation must have been extended and not diminished; *4th*, it is impossible, however, to say what quantity of the silver which has flowed in has passed into circulation, as, of course, only silver in circulation can affect prices, and the quantity of silver hoarded in this district is very considerable. But apart from considerations of this kind, I can state with tolerable confidence, from my knowledge of the district and my experience as a settlement officer, that the production of cereals is not diminishing. It is seldom that the ryot is tempted to sow jute upon lands which ought to be devoted to rice, as he has generally the command of lands of inferior quality, which are nevertheless very well adapted for jute."

Rungpore.—"The increase in the cultivation affects the population, which is nearly wholly agricultural, in a very favorable manner, as far as pecuniary matters go; they get much more profit out of this farming." "The district has always a surplus of cereals, and the increase in jute cultivation has only affected it to the extent that there is less rice exported since jute has taken its place."

Pubna.—"The extension of the jute cultivation, especially in Serajgunge sub-division, has been the means of adding considerably to the income of the ryots. Large sums of money were made by the industry in the years 1869, 1870, and 1871, and the losses sustained in 1872 were not equal to the amount formerly gained. There has been indeed a contraction of the area of land devoted to the cultivation of rice and other cereals; the production has therefore necessarily suffered, though not, I believe, to an alarming extent; but it does not appear to have affected the country or the population, inasmuch as the proportion of land under jute cultivation is considerably small when compared to the large area set apart for the cultivation of other crops; and the quantity of rice, &c., grown therefrom is more than sufficient for local consumption."

* * * "But, on the whole, I think that the advantages of the cultivation outweigh the disadvantages in ordinary times."

Rajshahye.—"The cultivation of jute has improved the condition of the ryots, owing to the high price which ruled the market during three or four years, does not admit of a question. Every man will exert himself to raise that article which has a growing demand and a ready market, and which brings him a handsome return. The market will always fluctuate, and it is difficult to foretell how long the present state will continue; the gains of past years will keep the cultivators in their pitch of activity for some time to come, and they will go on with the cultivation so long as they will find it remunerative. No danger need be anticipated that the extension of the cultivation of jute would cause a diminution of food-grains. The proportion of the land occupied in the cultivation of jute compared with the proportion of the arable land in the district is entirely small, and if a few square miles of land were devoted to the cultivation of jute, it cannot affect the general state of the district. The soil that grows early paddy will grow jute, and jute is alternated with early paddy."

Dinagpore.—"The present cultivation of jute affects the country and population favorably; when the market is high it has no effect on the production of the necessary amount of cereals, because there is plenty of land for both."

Bogra.—"Many people have enriched themselves by cultivation of jute, but in many instances the jute has been cultivated to such an extent that the supply of other cereals has fallen short, and the people have suffered in consequence." * * * "The jute plant tends to the decrease of other crops, leaving less room for their growth, and destroying the fertility of the land in the course of three or four years."

Midnapore.—"The cultivation of jute is carried on to a comparatively small extent, and hence the manner in which it is affecting the country and the population is not remarkable. Most of the jute grown is used by the

cultivator for his domestic purpose. A portion of the surplus is sold at its several markets. If there is any residue it is exported to Calcutta or elsewhere; but my belief is that, if anything, the district imports." * * * "However useful jute may be to the people, it does not contribute to their wealth to an extent deserving of notice. As to the effect of cultivation of jute on the production of cereals, &c., it may be stated that the plant is sometimes grown as an edging to the sides of ground cultivated with *biri kulai*, *aus* paddy, &c., but this is done not so much to protect the crops from the inroads of cattle, or to affect them in any other way, as not to leave uncultivated the sides of the ground on which the crops are grown."

Hooghly.—"Jute is a very profitable crop to the ryots; and since its cultivation has increased, it has improved the condition of hundreds of ryots. It has in some measure superseded the cultivation of *aus* paddy and indigo, which last in some places rotated with jute, but it has not interfered with any other produce."

Goalparah.—"The jute cultivation, as it at present exists, does not in any way affect the country and population. It is reported by the zemindar of Kurubarree that the ryots of that pergunnah resort to jute cultivation somewhat to the neglect of the growing of other grains, even to rice, because of the superior profit arising from jute cultivation."

158. I have quoted largely from the district reports to show what the different local officers think of the effect of the extension of jute cultivation in the country; but I cannot, I regret, concur with them in the opinion that jute has not injuriously trenchoned upon the land which used formerly to be devoted to food-grains and other crops. From Appendix II (p. lxiv *et seq.*) it will be seen that export trade in jute has increased from 496 maunds in 1828-29 to 10,342,081 maunds in 1872-73. At five maunds per beegah, the 496 maunds of 1828-29 would represent an area of 99 beegahs, and the 10,342,081 maunds of 1872-73 an area of 2,068,416 beegahs, *i.e.* an increase of from 99 to 2,068,416 beegahs. I have not been able to procure returns of the export trade in gunny-bags from 1834 to 1860; but the increase from 1863 to 1872-73 has been from 28,122,524 to 32,767,930 pieces. The pieces were not of uniform size; some were long rolls, others small pieces fit for gunny bags; their total value for the year 1872-73 was Rs. 83,07,629, which would give an average of about 15 pice per piece. Calculating each piece to weigh at an average $1\frac{1}{2}$ seers, the total of 1872 would represent 1,203,522 maunds of jute without taking into consideration the quantity wasted and thrown away as useless tow, or an area of 240,704 beegahs. Add to this about as much more for rope and twine and for the number of gunny-bags manufactured in the country and sent out with increased exports in rice, oil-seeds, pulses, and other articles, and the total would represent the enormous area of 2,549,824 beegahs of land devoted to jute cultivation for export trade only. The demand for jute for home consumption has also increased greatly; but of that I have no data to go by, and must therefore leave it out of my calculation. Of the large area under jute above shown, at the highest estimate one-fourth is newly reclaimed land which was not formerly under cultivation, and a sixteenth more, land disengaged from indigo cultivation, and the remaining eleven-sixteenths, or over two-thirds, represent the quantity which has been alienated principally from food-grains. I say "principally from food-grains," because it is certain that the requirements of foreign markets have caused an increased cultivation of oil-seeds and pulses, and not only no land has been alienated from them, but a part of old rice and other lands have been devoted to them; the bulk of the alienation has consequently fallen upon rice. The demand was sudden; it fell unequally on different parts of the country, making the greatest exactions on those parts where jute was most grown; there was not sufficient time allowed for reclamation of wastes, and the ryot had to take up whatever land was ready at hand and what he could conveniently spare, and the fields which yielded food-grains were the first to yield a portion of their area to jute. This enormous alienation cannot but tell against the food-supply of particular localities; especially as, owing to want of means of

intercommunication and other causes, the exchange of produce between the different districts of the country does not take place freely, and from immemorial custom people look to their supply of food from their own fields. The gradual but steady increase in the prices of food-grains since the Russian war of 1854 proves this incontestably. Doubtless there have been other causes at work; but most of these resolve into increased export, and increased export means larger areas devoted to other than food-crops for the people of the country. I should add, however, that up to this time the alienation has not so reduced the supply of food as to be injuriously felt; while it has undoubtedly exercised a wholesome influence on the cultivators by opening to them a new field of lucrative labour. It brings in money without making them dependent upon factory men, zemindars, and mahajuns, and has improved their condition generally: in some places so much so that the ryots pay the rent of their land from the proceeds of the sale of jute alone. The total culturable

paragraph.

159. The effect of the extension of jute cultivation in the country may be examined here from another point of view.

Sanitary effects of jute cultivation.
Opinions of local officers.

The process of preparing the fibre is one which causes extensive defilement of tanks and *bheels*

by the rotting of the parenchyma of the bark, and it is necessary to inquire what effect that has on the health of the people engaged in the work, as also on that of their neighbours. The subject early attracted my attention, and the district officers and civil surgeons were accordingly requested to favour the Commission with their opinions on that head. The following are extracts from the local reports which have alluded to the matter:—

Sudder Sub-division of the 24-Pergunnahs.—"When jute is steeped in any pond or tank within a village, it emits a smell injurious to the health of the inhabitants."

Baraset.—"The indiscriminate cultivation of jute * * * is injurious to the health of the people, as it poisons the water-supply of the country, which is already bad enough."

The District Officer in Cooch Behar also expresses a similar opinion.

Jessore.—"The steeping of the jute plant in stagnant pools within villages emits a most offensive smell, and causes the drinking water to become very foul, and thus a source of sickness to the surrounding population is engendered."

Dacca.—Dr. Wise says: "It is impossible to find out if the emanations from jute while steeping are injurious to health, as the *bheels* are extensive swamps in which vegetable matter is already decaying, and it is extremely unlikely that the additional amount derived from the rotting jute can add in any appreciable measure to the noxious gases which are produced under such circumstances. I can, moreover, positively assert that during the past seven years no outbreak of cholera in this district has been traced, or even attributed, to the steeping of jute."

Mymensing.—"My experience," says the Civil Surgeon, Dr. Shaw, "of the effect of jute cultivation upon the health of those employed in cultivating it, has taught me—

1st.—That the actual cultivation of the plant is not injurious.

2nd.—That when the plant is cut down and is undergoing the process of steeping, the exhalations from it are decidedly injurious. The symptoms I have most commonly observed in those exposed to the influence of these exhalations are nausea, head-ache, and diarrhoea. There can be no doubt that the continuance of these symptoms predisposes to other diseases, such as fever, dysentery, and cholera. Last year the first appearance of cholera in anything like a severe form in this district was at Dewangunge, in the Jamalpore sub-division, where, owing to a fall in the price of jute, the cultivation of it was almost abandoned, and whole fields of it, covering a large area of

country, were left to rot; the air and the water were tainted with it. Diarrhoea and dysentery were very prevalent; and a very fatal epidemic of cholera succeeded, which, in less than a month, carried off about 400 people in the villages on the *Mar* of the Brahmapootra, in the jurisdiction of Dewangunge thannah, by no means a very thickly populated area."

The Collector of the district writes:—"Some officers whom I have consulted are very strongly of opinion that, from a sanitary point of view, jute cultivation has had a very injurious effect. Mr. Donough, the Deputy Magistrate of Jamalpore, expresses himself in the following terms on this part of the subject:—"The atmosphere becomes so vitiated in all the localities where jute is extensively cultivated by the very offensive effluvia arising from the stagnant water in the pools and ditches in which the jute plants are rotted previous to the fibrous bark being removed from the stalk, that soon after the manufacturing is over endemical cholera and other diseases break out, and hundreds of the people die regularly every year at that season. And even when the plant is macerated in running streams, the water and surrounding air are similarly impregnated with the offensive effluvia." I give these views as those of an experienced officer, but not as myself in any way endorsing them. Of the unpleasantness of the smell there can be but one opinion; but an unpleasant smell is not necessarily unwholesome; and the smell in question is not unlike that of a tan-pit, which, I believe, is considered rather wholesome than otherwise. I do not think there is the slightest ground for assuming any connection between jute cultivation and outbreaks of cholera or of any other disease."

Rungpore.—Dr. Ghose says: "The causes of cholera are not so well ascertained as to warrant us to give a decided opinion as to whether the steeping of jute causes cholera or not. It may, however, be said with a tolerable amount of certainty that cholera is not directly produced by insanitary condition brought on by the process, for heaps of instances are known in which whole districts have been filled with the stench from the putrifying jute without there being a single case of cholera present in them. On the other hand, evidence is not wanting to show that, though not a direct cause, decomposing vegetable matter in the drinking water imparts an undue activity to the germs of cholera, should they be present."

"The steeping of jute," he continues, "renders impure two of the essential articles that keep up life, viz. air and water. During the rains, when ditches are full of water, jute is steeped in them. The stench that is given out is very disagreeable, and cannot but be a prolific cause of periodic fevers and bowel-complaints. In addition to these weather diseases, the breathing of the air must produce an imperfect condition of nutrition, making itself evident in an enlarged condition of the spleen. Though these ditches are not used as sources of water-supply, yet after heavy rainfall they overflow and mix with the surface drainage, get into wells, rivers, and tanks. When the water-supply is thus tainted, it must have a prejudicial effect on the health of the people."

"It so happens that the jute-growing districts in Bengal are more or less malarious, and therefore it is impossible to ascertain how much of the fevers and dysentery prevalent in these places are owing to malaria, and how much to the steeping of jute."

"I am strongly of opinion that the steeping of jute has much to do with the fevers that prevail in the districts where that fibre is grown during the months of August and September."

On the same subject the Collector writes:—"It is an open question whether the extension in jute steeping has not affected the health unfavorably in making the epidemics of cholera more frequent and deadly."

Rajshahye.—"The present method," writes the Collector, "of soaking the jute in ponds and stagnant pools is attended with inconvenience from the offensive smell which the steeping gives rise to. The health of the men in the neighbourhood where jute is washed is considerably affected by the disagreeable effluvia which rises from the water."

Pubna.—Dr. Davies writes: "I have lately been on a tour through the district, visiting the jute market of Serajgunge, among other places, and took the opportunity of making inquiries as to the prejudicial effects of jute-steeping, but failed to discover that the stench arising therefrom caused any particular diseases to break out." * * * "The stagnant water in which jute is steeped, if afterwards drunk, to save the trouble, perhaps of fetching better from a distance, would doubtless be apt to cause bowel-complaints of a more or less serious nature." For this reason "the steeping of jute is, to a certain extent it may be, and I think is, only to a small extent prejudicial to the inhabitants of the district in which the plant is cultivated."

"I attach," says the Collector, "some importance to the fact that jute produces a most offensive smell while being steeped, thus adding a new horror to the dreadful autumn of Eastern Bengal."

Bogra.—Mr. Lyons: "(1) The living plant is not noxious to health, but the occupation of preparing the fibre is so, in as far as the operator has to work for days and hours together in water up to the middle; hence, his greater liability to rheumatic affections, bowel-complaints, and fever. (2) When the process of steeping goes on in a rapid, running stream, say as is the case in the eastern tracts of this district in the Daokola and Benyali rivers and other running streams, the effect upon health is not noticeable; but where the process of steeping goes on in tanks and stagnant bodies of water, it undoubtedly affects the health of the inhabitants injuriously by producing bowel-affections and symptoms closely allied to those of cholera."

"I cannot but believe that the stench arising from the steeping of jute plant is deleterious to health, as all stenches are."

"As in the places I visited the steeping was carried on in running streams, I did not find cases of sickness attributable to jute-steeping."

"I have, however, little doubt in my mind that, could I visit places where the rotting goes on in tanks and stagnant ponds, I could find that much serious sickness could fairly be attributed to infected air and water."

The Collector adds: "The smell from the saturated jute bundles and from the water in which they have been immersed is prejudicial to health, fever and diarrhoea ensuing from it."

Burdwan.—"The immersion of the plant in stagnant pools causes decomposition and sends up effluvia, which affects the health of the people."

Goalparah.—Dr. J. Slane: "I am disposed to believe that the steeping of jute in tanks, even though accompanied with stench, will not prejudicially influence the health of the inhabitants residing in the neighbourhood of the tanks so long as they abstain from using the water for drinking or bathing. The mere rotting of vegetable matter in water, unless under exceptional circumstances, judging from analogy, does not produce disease. I have known large quantities of horse litter at the Haupper Stud thrown into tanks for conversion into manure, and never knew the slightest ill-effects produced on the health of the European officers and native establishment. Indeed cholera is of a very rare occurrence at the Stud."

Dr. McDonnell of Serajgunge, whose long local experience as well as professional knowledge entitle his opinion to weight, says: "I do not agree that it" (jute-steeping) "is in any respect unhealthy, or that it breeds any disease. It is certainly offensive to our olfactories; but as a case in point, so is the water in which the indigo plant is steeped, and so is the refuse of the indigo plant; but they are well known to be otherwise than unhealthy. The drinking of the water would no doubt be injurious, but from June to September people can well find other water."

160. In a professional question of this kind where medical opinion is so discordant, it would be presumptuous on my part to draw any deductions. I may safely observe, however, that if there be any truth in the opinion which attributes unhealthiness to offensive smells from decomposing vegetable matter, the rotting of jute in the midst of human habitations must be injurious, and there is no question that it is

extremely offensive to our olfactories. Inasmuch, however, as the rotting process is not generally conducted in the midst of large populations, but away from villages, in neglected tanks, ponds, and *bheels*, whose water is never drunk, and also in rivers whose running waters carry away the bulk of rotting matter as soon as dissolved, and also a quantity in an undissolved state, the injurious effect of the operation cannot be felt by the people to any very large extent. As the operation is carried on in the months of August, September, and October, notoriously the most unhealthy months in Bengal, there is doubtless a coincidence of increased disease with the season of jute-retting; but as the increase of illness and mortality takes place likewise in an equal degree in those districts where no jute is manufactured, the coincidence is simply accidental, and not related to each other as cause and effect. Generally speaking, the cultivators themselves do not attribute any unhealthiness to jute-retting. Of course the contamination of tanks and wells which supply drinking water by the overflow of rivers, ponds, and *bheels*, in which jute has been macerated, is a serious matter, and, where it happens, must be very injurious; but this accident, I think, is not frequent. The percolation of the foul water through the soil into fountains for the supply of potable water is also possible, and it would doubtless be equally injurious; but I had no means of ascertaining during our necessarily hurried tour in the mofussil before the rains to what extent it does really take place.

161. As already stated, jute is cultivated by the ryots as a secondary

Advances not usually taken.

object to fill up a gap in their occupation, or rather as a supplementary article to rice and other staple produce. Very few, if any, devote to it exclusively, and as the out-of-pocket expense at the first start is slight, the labour, seed, and manure, when used, being the cultivators' own, there is no demand for advances, and a good number of ryots in easy circumstances carry on the cultivation without taking any advance from mahájans or dealers. But in some places the system of advances is in vogue.

162. In the Barriporc sub-division of the 24-Pergunnahs some ryots are

Advance bonds.

known to grow under advances made by *bepáris* or *paikáris* (petty dealers). To show the nature of the conditions under which advances are made, I append copy of a form of contract entered into by a jute-grower in that part of the country (Appendix D, pp. LIII *et seq.*). In this deed the producer, in consideration of an advance of Rs. 24 received by him in Kártika (October), binds himself to deliver 12 maunds of well-dried jute in Pous (December), and in case of failure he agrees to pay the value of that quantity according to the market rate of the day. Written contracts are not, however, often made. As in other cases with the people of this country, so in this, the business is generally carried on under verbal arrangement. Written contracts when made are known under different names. In the Mymensing district they are called *shátá pállá*, or *gobáját*; but in the 24-Pergunnahs these deeds are known as *mohá*.

163. In Dacca the advance system is not much in vogue; but it is pre-

Conditions under which advances are made in Dacca, &c.

valent in Rungpore, Mymensing, and Goalparah, where the conditions under which the advances are made and received are various. In some places the advancing party, commonly called the mahájan, makes advances on the express understanding that he is to be repaid in jute, to be delivered at the market rate of the day, and that he is also to be paid a commission of 1½ seer of jute for each rupee advanced. In other places the entire produce of the field or fields is made over to the mahájan. In case it realizes more than the sum advanced, the producer is allowed a refund of the difference. In one or two places the mahájan is content to take only 2 pice on the rupee. In and about Jamalpore, in the Mymensing district, a ryot under advance has to give to his mahájan 5 seers on every maund of jute sold by him to cover the charge for interest on the loan; and I have the testimony of several agriculturists to the fact that in some instances, in addition to the 5 seers of jute, 2 pice has also been charged by the mahájans by way of interest.

164. Appended are copies of two plaints which had been once filed in the

Claims for damages.

Court of the Moonsiff at Jamalpore, as also of contracts upon which the suits were based. It will be seen from these documents that the growers in these cases obtained advances in the months of February and March from certain mahájans, binding themselves to pay in jute, and on their failure to fulfil their engagements, the man who had received Rs. 15 to supply nine maunds and fifteen seers was sued for Rs. 37-8, with costs and interest, and the man who had received Rs. 20 on condition of delivering fifteen maunds, was sued for Rs. 60, with costs and interest on the account.

165. In parts of Rungpore, however, the grower borrows money on the

Terms of contracts in Rungpore, Goalparah, Deora districts, and Mymensing.

pledge of the crop, giving two seers of the fibre for every month the money remains unpaid. In other parts of the same district the ryot, when taking the advance, binds himself to deliver the produce of his field at the market rate of the day, less annas four for every maund delivered. Towards Chilmarí on the Brahmaputra, when the mahájan wishes, the rates are fixed at the time the contract is made, and in some instance the party receiving the advance has to deliver his produce at annas two less than the market rate.

In Goalparah the ryots sometimes grow the staple under advances, which they repay in jute, with interest at the rate of one anna to one and half anna per rupee.

In the Deora districts the ryots, as a rule, do not grow under advances. Sometimes a needy ryot, when pressed for money, borrows it from the mahájan of the village and repays the loan in jute, with two to five seers of the fibre over and above each maund contracted for.

In the Kishoregunge sub-division of Mymensing the mahájan generally takes jute from the ryot, who has received an advance, at four annas less than the market rate on every maund; and if the stipulated quantity is not delivered in the same season, the deficiency has to be made good in the following year.

166. Where jute is not grown under advances, the ryot takes the raw pro-

Buying and selling.

duce of his crop in bundles, into which the hanks of the fibre are made up, to the nearest *hát*, or to the large marts, according to local circumstances, and there sells it to petty traders, differently known at different places under the names of *páikáris*, *farúis*, or *bepáris*, who take the produce away, and in their turn dispose of it to the mahájans, or merchants of greater pretension. The petty traders also go about with money from homestead to homestead, making purchases of the fibre, which they either dispose of on their own account, or make over to the mahájans from whom they may have received advances. These itinerant traders, known in the eastern districts, where they have to travel in boats, as *bhásáná bepáris*, and elsewhere as *farúis*, are to be met with in every district where jute is largely grown, and almost everywhere they stand in the middle between the jute-grower and the merchant. In Rungpore jute sometimes passes from the ryot direct to the mahájans themselves, who send it to Calcutta. It is disposed of to bepáris from Serajgunge, who go up in boats, occasionally with salt, but oftener with cash, either bartering for, or buying up, the jute according to the ryot's choice. These bepáris are generally allowed a half share in the profits of the venture by the Serajgunge mahájans, who sell the jute at that mart to native or European merchants for shipment to Calcutta. In Dacca, when the ryot owns a boat, he himself goes with his produce direct to the mahájans, chiefly at Naraingunge. Sometimes two or more ryots club together and hire a boat jointly to carry their produce to market. But the *páikár* or *farfa* prevails everywhere.

167. Mr. Nolan's graphic description of the manner in which transac-

Mode of conducting sales.

centres of the trade.

tions in jute are conducted at the Serajgunge mart may, *mutatis mutandis*, stand for other large rural
 "The hanks," he says, "are brought by boat or on men's heads to the nearest market or *hát*, one of which is to be found within a few miles of every

village. There it is sold to the *bepāris*, as the dealers who go into the interior are called.

"The *bepāris* never give advances to the ryots, but always pay in ready money."

"The jute is next put into boats of from 50 to 150 maunds burden, and conveyed by the *bepāris* to the exporting marts—Serajgunge, Raygunge, Paurgassi, Chunderkona, Oollaparah, and Shuhajadpore. There the fibre is sold to the *mahājān*, the merchant who remains stationary in one place and buys jute brought to him, either as a speculation, or for a commission of 5 per cent. In Serajgunge the *bepāri* deals with the *mahājāns* through the agency of a broker, called a *dollal*. Sales are conducted in a floating *bazaar* on the river, where all classes of traders, European as well as native, are to be seen daily between 8 and 11 A.M., passing backwards and forwards in light boats, called *dallaly dingis*, amidst an incessant clamour of tongues. More than half the *mahājāns* are *Murwarces* (called *Kayas*), and their gay dress and the rapid movement of their boats give an animated appearance to the scene. There is the greatest noise and confusion in every side, but the real business is transacted without a word. The *dollal* tells the *mahājān* what is the number of maunds of jute in his client's boat, and where it comes from; he offers a sample, and then they put their hands together under a cloth. Offers and demands are indicated by tracing the Bengalee figures expressing the rate per maund on the palm of the person concerned, no one else being able to know what amount is to be given or received. If the parties come to terms, a little jute from the sample is delivered by way of a sign that the bargain is complete. This trade language of signs is used at Naraingunge, and probably in most Indian marts. It may have been introduced by the *dollals* in order to cheat the *bepāris*. These country traders are exposed to be deceived as to the price agreed to, and they always seem to me to play a very ridiculous part sitting in a corner of the boat while strangers dispose of their property by secret signals.

"The bargain made in the broker's boat is seldom adhered to. When the *bepāri* brings his jute to the *mahājān's* ghât, he is told, generally with great truth, that it is not of as good quality as the sample, and the price has to be settled over again. If the market has risen, the seller claims the benefit."

168. In cases of disputes regarding the quality of the article bargained for, a reduction is the usual course; and if this cannot be adjusted by the parties concerned, arbitration is usually resorted to. The price is usually paid on the twentieth day after purchase.

169. The weight by which jute is sold in the villages and smaller markets varies from 60 to 90 tolabs to the seer in the different districts. At Serajgunge (Pubna) the standard is 84 tolabs and 10 annas, at Madaripore (Backergunge) it is 82 tolabs and 10 annas, and in Calcutta it is 80 tolabs.

170. At the mart of Serajgunge in Pubna jute is bought by the *Oswāl* firms from among *Oswāl* dealers, on a commission of 1 per cent. in the case of traders who receive advances to make purchases at the different rural seats of produce, on condition that they shall dispose their investments through the advancing firm. Besides this commission interest at 9 per cent. per annum has to be paid by the trader on the amount of the advance. The buyer is further allowed half a seer of jute upon each drum (about a maund) by way of allowance for possible error in weighment (*dhallâ*), and an overweight of another half seer on the same quantity as a gratuity. The seller has, moreover, to give five seers on every hundred maunds to the crew of the buyer's broker's boat, and similar allowance to the buyer's crew for weighing the jute bought.

171. If the seller happens to be a Bengalee, the allowance to the *Oswāl* buyer's crew has to be doubled. The commission also is enhanced from one per cent. to two annas per maund, which, however, in the case of unusually large sales, is reduced to $1\frac{1}{2}$ annas. For retail sales and small consignments it rises to 3 annas per maund.

* Allowances at sales, &c., at the Seraj-gunge mart.
and Bengalis.

172. In dealings amongst Bengali agency firms and dealers the usual commission is two annas per maund, without reference to advances. No interest is charged on advances.

Allowances at sales, &c., among Bengalis.

The jute stores of Serajgunge are fed by supplies drawn by itinerant traders, chiefly from the districts of Rungpore, Goalparah, Bograh, parts of Mymensing, and Cooch Behar. The places from which the different qualities of the jute at this mart are brought are named in Appendix B, No. 36, p. xxvi.

173. At Naraingunge (Dacca) the agency houses charge the seller a commission of from $\frac{1}{2}$ anna to 4 annas, and sometimes even up to 5 and 6 annas on each maund, less a pice per maund allowed to the broker through whom the sale is effected, the lighter rates being usually charged to those who do not take advances; but this is not invariably the case. Traders receiving advances without giving a security or executing a bond are sometimes charged 18 per cent. interest on the amount advanced, in addition to the commission. No *Oswals* have opened business here.

The importations to this place come from Noakhally, Burrisaul, Mymensing, Tipperah, Sylhet, and from the banks of the Luckhee.

174. At Madaripore (Backergunge), the largest centre of the *deord* jute trade, the local merchants buy up either direct from the growers, or through petty dealers, as in the other marts. The purchases are made for ready money generally. No advances are made either to the grower or to the petty trader.

The produce of Furrcepore and Backergunge is collected chiefly at this mart.

175. At the two marts of Serajgunge and Naraingunge the jute is generally made up into drums before it is forwarded to Calcutta. Sometimes it is sent in hanks also. But the *deord* jute is invariably forwarded in skeins.

Treatment of jute at the marts.

The cost of making a hundred drums ranges from Rs. 3-2 to 4-0.

Appendix K (pp. LXXIII to LXXVII) gives a list of the marts and markets in the district of Bengal in which jute is bought and sold.

176. The Commission has not been able to collect any satisfactory returns of the internal trade in jute. There is evidence enough to show that large quantities of the fibre pass from district to district for local consumption, for manufactures, and for despatch to other places, but no figured statements of the quantities which so circulate have come to my hands.

Inter-district trade

For instance, a great part of the produce of Bogra is sent to the marts of Serajgunge and Pangassi in Pubna, but the exact quantity so sent is unknown. Rajshahy also sends its jute to Serajgunge, but its measure is also unknown. In Dinagepore the gunny-bags manufactured in the northern parts of the district, "are," says the Collector, "bought up at the different *huts* and sent to Debee-gunge on the Atrai, which may be considered the head-quarters for gunny-bags in this district." "The bulk of unmanufactured jute," he continues, "goes down" (it is not stated whither) "by water; and a large amount of gunny-bags are retained in the district at the *gunges* on the different rivers to pack and dispatch rice in." But he has not been able to collect any details as to quantities.

Again, the Hooghly district is said to send a great part of its produce to the Gouripore Mills, where it is manufactured chiefly for exportation.

From Purneah jute is sent to the district of Mirzapore in the North-Western Provinces, but in what quantities it is not stated.

Burdwan is also said to import the fibre for local use from Serajgunge and other jute-producing districts of Eastern Bengal.

During 1872 about 472 maunds were imported into Beerbhoom, 400 maunds being intended for the jail, whence it was mostly re-exported in a manufactured state.

Jute is imported also into Moorshedabad from Dinagepore, Rungpore, Pubna, and Maldah. The quantity so imported annually is about 25,000 maunds,

which mostly goes to the city of M^oorshedabad and to Baluchar. Besides this quantity, some 20,000 maunds, produced in the district, are annually sold at Dholasp, a most flourishing mart on the Ganges. The importation from other districts is effected by boats; but carts are generally used for transporting home-grown jute within the district. "I believe," writes the Collector, "that a portion of the jute imported into this district is subsequently exported to Calcutta; but, as far as I can ascertain, little or no exportation takes place with respect to jute grown in the district."

In 1872-73, 2,564 maunds of jute are stated to have been imported into Chittagong for local consumption from Naraingunge, the only mart from which that district draws its supplies. During the same period Chumparun imported 2,200 maunds, principally for use in the indigo factories; Tirhoot, 12,028 maunds; Gya, about 500 maunds; and Patna, about 2,000 maunds.

But no record has hitherto been kept of the extent and direction of the internal trade necessarily existing between districts which grow jute largely and districts which, needing the fibre, grow it scantily, or do not grow it at all. There is a strong trade jealousy, which prevents dealers, manufacturers, and others connected with the trade, which stands in the way of collecting information on the subject, and I regret therefore I am unable to submit any more detailed statement on the subject than what is afforded by Appendix P, p. xxi.

177. The great bulk of jute brought down to Calcutta finds its way thither by water, either in country boats or in steamers, principally for exportation.

From Pubna it is sent by water direct to Calcutta, or first to Kooshtea, or Goalundo, whence it is brought down by rail. The cost of transport varies from 4 to 7 annas per maund. From Serajgunge jute is conveyed direct to Calcutta, and the cost of transport is stated to be about 4 annas per maund, if in boat, and about 10 annas, if in steamer.

The exportation from Dinagepore takes place "partly by land and partly by water." The rivers going down before the jute is ready for shipment, it has to be carted to some mart further south of the districts, where it is put into boats, and sometimes transhipped from smaller to larger boats.

"The cost of carting," the Collector writes, "say 8 to 10 maunds in a cart, a four days' journey, at 12 annas a day per cart, five days from Dabcegunge to Nyabunder, and three days to return empty." * * * "Rs. 13 is the cart-hire charged for 40 *bustas*; the carts do three trips a month." * * "At Nyabunder the *bustas* are put into small boats, holding about 30 maunds or less; boat-hire from Nyabunder to Neetpore is Rs. 3 for 40 *bustas*. At Neetpore they are transhipped to large boats and sent to Calcutta or Kooshtea, where they come in from 12 to 21 days." The cost of carriage thence to Calcutta is not stated.

Rungpore sends its produce by steamer or in country boats to Calcutta direct, at a cost of Re. 1-2-0 per maund, or to Serajgunge at a cost of 7 or 8 annas per maund.

The mahájans of Shumbhoogunge (Mymensing) send jute, which they locally purchase, either to Naraingunge or Serajgunge, in boats of 300 or 400 maunds burden, but it is not stated what the boat-hire costs to either place. Sometimes they even forward it direct to Calcutta in charge of the *mutnji* of the boat, who is known at times to dispose of the jute on his own account, and to return to the mahajan with a false tale of wreck and total loss of cargo. The cost of boat-hire to Calcutta direct varies from Rs. 35 to 50 per 100 maunds, being dearer in November and December in each year, when the rural population is engaged in harvesting the rice-crop.

From Tipperah jute is sent by boat to Dacca, Naraingunge, and one or two *dehats* on the bank of the Megna. The cost of transport is said to be Rs. 3 to 5, according to circumstances and distance.

Boats bring the fibre from Purneah to Calcutta at a cost of Rs. 80 for every 100 maunds.

Bogra also despatches its produce in boats, taking the Muddhoopore police station as the point of shipment. The Collector states the cost of transit per maund to be as follows:—

			Rs.	A.	P.
To Serajgunge	...	...	0	8	0
" Pungassi	...	...	0	6	0
" Calcutta	...	...	0	12	0

The jute of Rajshahye is forwarded chiefly to Calcutta by boats at a cost of Rs. 17 per 100 maunds, and the cost is nearly the same when it is sent from Ramporehât first to Kooqstea by boat, and thence by rail to Calcutta.

The Eastern Bengal Railway, the steamers and country boats are employed in the despatch of the produce of Dacca; but the largest quantity is carried away in steamers.

The charge for the transport of a maund is said to be as follows:—

		Rs.	A.	P.
By rail or steamer from Naraingunge to Sealdah	0	11 9
By boat from Naraingunge to Calcutta	0	9 0

In Hooghly the jute is carted or sent on pack-bullocks to the river's bank, and thence put into boats for Calcutta. The cost is one pie per maund per mile.

How and at what cost jute is exported from Julpigoree, cannot be ascertained from the local reports.

Cooch Behar sends its produce to Serajgunge by boat at a cost of 6 annas per maund.

To the same mart Goalpara forwards jute either by boat or in steamers, at an expense of 4 or 5 annas per maund.

Furcedpore exports its jute entirely by water carriage, occasionally direct to Calcutta. Generally it is collected at the different centres of the trade in the district before transmission to the Presidency, and it is also forwarded through Naraingunge in Dacca, and Madaripore in Backergunge.

The charge for boat-hire direct to Calcutta is from Rs. 20 to 25 per 100 maunds. But according to the distance of the local marts, it is from Rs. 3 to 7 for the same quantity if conveyed to Goalundo for transmission by rail.

From Backergunge country-boats convey the produce to Calcutta at a cost of from 5 to 5½ annas per maund.

Boats carry the fibre from Sylhet at the following cost for 100 maunds:—

From	to		Rs.	A.
From Lughan	to Bhoirub Bazar	...	3	12
" "	to Naraingunge	...	7	8
" Balalgunge	to Bhoirub Bazar	...	11	4
" "	to Naraingunge	...	15	0

Jute is carried out of Maldah principally in boats at a cost of from 3 to 4 annas per maund.

In the other districts it is not likely that any exportations of the fibre can be going on, the quantities grown being barely sufficient for local consumption. Indeed it is more probable that they depend in a great measure on the supplies they can draw from the jute-growing districts; but, as I have said before, in the absence of reliable statistics the actual, or even the approximate, extent of this internal trade cannot be ascertained.

178. To what extent these different means of transport are resorted to, and the quantity of jute carried respectively by them, I have no figures to show. From the inquiry we made at the three principal marts of Serajgunge, Naraingunge, and Madaripore, we learnt that during 1872 the quantities exported to Calcutta from those places were as follow:—

				Maunds.
Serajgunge, about	...	...	...	3,500,000
Naraingunge, "	...	...	...	1,100,000
Madaripore, "	...	...	...	300,000
Total	...	...	...	4,900,000

179. No information has been received from most of the districts either of the quantity of jute produced or of the quantity exported. From the statements received of the

Estimated produce for 1872 and 1873.

total culturable area of each district and the area devoted to jute, I have compiled the following table showing the names of the several districts arranged according to the extent they produced jute, their respective areas of arable land, the extent of land devoted to jute in the years 1872 and 1873, and the total yield, as affording some data for making an estimate as to what their exports may be. It is, however, not very satisfactory. After a careful study of the yield in different districts, I could not assume it at a higher figure than an average of five maunds per beegah; in some public records it is accepted at three maunds, and taking into consideration total or partial failures, accidents and varying crops from bad and good lands, it cannot possibly be more than what I have estimated it at. But calculated at that rate the estimated area given by the district officers afford a result which is inaccurate on the face of it, as will be manifest on reference to paragraph 182.

Table showing the respective areas of the culturable land in the different jute-growing districts, and their estimated annual yield.

DISTRICTS.	Total area of arable land in acres.	1872.		1873.		REMARKS
		Area under jute in acres.	Yield of jute in maunds.	Area under jute in acres.	Yield of jute in maunds.	
Pubna	878,840	122,380	1,843,200	47,300	710,400	
Dinagapore	1,050,400	117,620	1,764,435	.....	.....
Rangpore	1,800,000	100,000	1,500,000	37,500	502,500	
Myanensang	1,344,000	84,000	1,360,000	70,000	1,050,000	
Tippurah	2,000,000	78,300	1,175,835	52,353	783,870	
Purneah	2,400,000	75,000	1,125,000	50,000	750,000	
Jalpaigore	1,200,800	50,000	750,000	50,000	750,000	
24-Pargunnahs	2,910,080	47,162	707,430	35,372	530,580	
Bogra	411,001	46,389	698,285	35,419	531,285	
Dacca	1,685,414	40,000	600,000	25,000	375,000	
Hooghly	640,000	32,000	100,000	16,000	240,000	
Cooch Behar	600,000	25,000	375,000	25,000	375,000	
Farrakapore	850,771	10,000	240,000	6,240	93,735	
Goalparah	2,700,200	15,000	225,000	11,250	168,750	
Rajshahye	1,280,000	14,333	214,995	6,000	90,000	
Backergunge	100,401	11,605	174,990	5,500	82,000	
Midnapore	2,304,000	8,000	120,000	3,000	45,000	
Sunderbuns of 24-Pargunnahs, Jessore, and Backergunge	505,739	6,220	93,300	6,220	93,300	
Jessore	2,024,960	6,385	95,775	6,000	90,000	
Cuttack and Tributary Mohals	1,271,550	4,228	63,420	4,228	63,420	
Burdwan	1,802,244	4,000	60,000	4,000	60,000	
Moorsheadabad	1,106,782	3,608	54,900	3,866	54,900	
Noakhally	590,417	3,636	54,540	3,636	54,540	
Maldah	670,080	3,500	52,500	3,500	52,500	
Howrah	220,800	2,006	30,900	2,475	37,125	
Darjeeling	16,402	1,500	22,500	1,500	22,500	
Nowgong	820,480	1,437	21,855	1,437	21,855	
Pooree ... ..	.....	1,000	15,000	1,200	18,000	
Nuddoa ... ..	.....	1,000	15,000	1,000	15,000	
Balasore	638,209	1,000	15,000	1,000	15,000	
Sylhet ... ..	.....	666	9,990	666	9,990	
Kamroop ... ..	.....	310	4,650	310	4,650	
Purnea	1,082,560	186	2,790	186	2,790	
Chittagong	97,900	100	1,500	100	1,500	
Cachar	1,850,360	55	825	55	825	
Total	37,738,160	926,989	13,568,485	517,107	7,756,106	

180. The quantity of jute brought down to Calcutta by land or by water during the years 1870-71, 1871-72, 1872-73, according to the subjoined table appears to have amounted to 19,133,643 maunds. The table has been compiled from the fuller details given in Appendices F and G, pp. lxii, lxiii, with the exception of the figures in columns 3 and 8, and of those in the third entry in column 6, marked *d*, which have been estimated from the area of cultivation and yield shown in the district returns. Column 3 gives the estimated quantity of jute raised and exported from the Hooghly district, including Howrah, which sends nearly the whole of its produce down in country boats. As no return of the quantity of fibre brought down by the Eastern Bengal Railway during 1873 was available, I have assumed the imports through this channel for the year at 200,000 maunds less than the imports of 1870-71, to allow for the smaller area cultivated. In column 8 is entered the quantity imported from the 24-Pergunnahs, which brings its produce chiefly in carts. The outturn of the two districts of Hooghly and the 24-Pergunnahs has been calculated at an average of five maunds per beegah on the estimated area under jute in the years in question, minus the quantity locally consumed, which has been taken to be a half maund to each household. The average of produce per acre is in some districts higher, but to be on the safe side I have adopted a low figure.

1	2	3	4	5	6	7	8	9	10
YEARS.	By registered country boats.	By unregistered country boats.	By New River Steam Navigation Co.	By India General Steam Navigation Co.	Eastern Bengal Railway.	East Indian Railway.	By carts.	Grand Total.	REMARKS.
1870-71 ...	2,404,108	<i>d</i> 232,832	326,116	405,402	1,747,402	1,425	<i>d</i> 554,733	5,702,078	a. Calendar year 1871
1871-72 ...	3,216,943	<i>d</i> 467,064	278,322	770,884	2,003,315	4,400	<i>d</i> 701,583	8,348,101	b. 16th 1872.
1872-73 ...	2,245,808	<i>d</i> 232,832	140,405	<i>d</i> 201,053	1,547,402	6,151	<i>d</i> 554,733	5,028,464	c. Six months of 1873
	7,956,909	933,329	753,933	1,408,239	6,108,119	12,056	1,811,049	19,133,643	d. Estimated.

181. From the above synopsis it will be apparent that next to country boats the Eastern Bengal Railway has been very largely utilized in the transport of jute to Calcutta. The reason why the East Indian Railway is not more extensively made use of must be obvious. The only districts which grow jute on this line are Hooghly, Burdwan, and Moorshedabad; and of these Hooghly, including Howrah, sends its jute in country boats; and only the surplus produce of Burdwan and Moorshedabad, which yield jute to a very limited extent, finds its way down by this line of railway.

182. These returns, however, do not convey a correct idea of the total quantity of jute brought to the Calcutta market. To demonstrate this I annex the following statement showing the total quantity of jute imported into Calcutta, and the quantity of the fibre, both raw and manufactured, shipped from Calcutta to all foreign ports, including Madras and Bombay. The figures

Imports into Calcutta.

Returns do not show actual imports correctly.

as regards the exports are taken from Appendices H and L (pp. lxiv et seq.) :—

1	2	3	4	5	6	7	8	9	10	11
YEARS.	Imported into Calcutta, according to last table.	EXPORTED FROM CALCUTTA.								REMARKS.
		Raw.				Manufactured.				
		Jute.	Rejections.	Cuttings.	Value.	Gunny.	Value.	Twine and rope.	Value.	
Mds.	Mds.	Mds.	Rs.	Pieces.	Rs.	Mds.	Rs.	Total value of raw. Total value of manufactured		
1870-71 ..	5,762,073	4,081,133	588,775	.....	2,58,55,795	20,961,620	66,18,572	• 4,544	30,41	Total value of raw. Total value of manufactured } Rs.10,99,06,771
1871-72 ...	8,343,161	7,204,929	229,458	1,271,622	4,17,04,856	27,286,889	65,68,597	16,730	85,306	Total value of raw. Total value of manufactured } Rs. 2,19,62,338
1872-73 ...	5,029,464	7,098,210	883,472	1,781,281	4,23,40,620	32,767,980	83,07,620	7,071	51,485	
TOTAL ..	10,133,643	19,870,292	1,301,705	3,052,903	10,30,00,771	81,016,418	2,17,95,138	28,445	1,67,200	Grand Total. } Rs.13,18,72,100

This table shows that against a total import for the last three years of 19,133,643 maunds there was an export of 24,133,900 maunds of raw produce, 81,016,448 pieces of gunny-bags or cloth, and 28,445 maunds of twine and rope; or nearly fifty per cent. over the quantity returned as imported into Calcutta from all the districts during the same period. And this is irrespective of the quantities devoted to manufactures for local consumption and wastage in course of manufactures for local use and exports.

183. This comparison discloses so great a disproportion between the imports and exports, that some explanation appears to be necessary. The Custom-house returns of exports are unquestionable, and the returns of imports must therefore be taken as at fault, and this arises from the fact of large quantities of jute being brought down by country boats and carts mixed up with other articles of rural produce, and of which therefore no separate record is kept at the toll offices. It is only when a boat is laden exclusively with this fibre that the quantity of its cargo is recorded as such, while mixed cargoes are all reckoned by the name of whatever goods happen to be the largest in the invoice. We have no assurance also that the appliances are available, or made use of, for the correct admeasurement of the tonnage of boats passing the different toll-bars. Pack bullocks are also employed very extensively in most places for the carriage of jute, and no record is kept of these.

It might also be said to account for the conflict that the imports of one year into Calcutta are not, as a rule, exported out of it in the very same year, but that the shipments are timed to the prevailing rates of freight in this port, or to the ruling prices of the fibre in the markets out of India, and consequently the figures of imports and exports cannot always tally. But this can cause a difference in one year only, and is quite insufficient to explain the differences of three consecutive years to the extent they are manifest. Making every allowance, however, for these several causes, it appears to me that a large margin of difference is still left, which cannot be accounted for in the present state of our information regarding this trade.

184. I shall now describe the system of trade in jute in Calcutta. When a consignment of jute reaches Calcutta by rail, it is carted away to the godown of the consignee, generally an *Aratdar*, or commission agent, who sells it at his own discretion, charging godown-rent at three pies, and commission at one anna, for every maund sold. The rent is charged for the total period the goods are stored, without reckoning the exact time, or making any difference for the occupation of the godown for a long period in cases where the sale is delayed. The *Kainyās* of Burrabazar, however, do not follow this custom. They charge from Rs. 10 to Rs. 35 for each godown per month.

* *Modus operandi* of trade in Calcutta.
Imports by rail.

185. If a consignment is coming by country boats, the consignee sends out

Modus operandi of trade in Calcutta.
Imports by boat.

men, called *Khálgastis*, who go beyond the Bamun-ghata toll-house, board the boats consigned to the firm, and discharge the prescribed tolls, which are subsequently recovered from the consigner. When the jute is sold from the boats in which it is brought, a commission of only one anna on each maund sold is charged by the consignee. But if the consignment has to be kept in the *árat*, or commission agent's godown, three pies more are charged, as in the case of jute brought by rail, on account of godown-rent.

The *Aratdár*, or commission agent, to whom the consignment is made, acts as the seller's broker. The produce is, however, disposed of through the intervention of a regular broker, who acts on behalf of the intending buyer, who is either a native merchant engaged in selling jute in bales, or a European exporter. The European exporting firms are the principal buyers. Occasionally, but rarely, when the market is very low and the consignee is particularly anxious to close his account, the *Aratdar* himself becomes the purchaser; but this, when done, usually results in a *benámí* transaction.

When the fibre is approved of, and the terms are settled between the commission agent and the broker, a *Jáchundár*, or examiner of the quality of the fibre, is called in to examine the consignment in the buyer's interest, and to fix the quantity to be given over and above a maund in case the fibre be found wet or inferior to sample.

186. Sometimes even before the bargain is settled, or the disposal of

Advances by consignees.

the consignment has been arranged for, the *Aratdár*, or commission agent, if applied to, advances to the consignee nearly the whole amount of the market value of the consignment, charging interest at 12 per cent. per annum. If the sale-proceeds exceed the amount of the advance and charges, the surplus is remitted to the seller, who, on the other hand, is required to refund the difference if the sale-proceeds fall short of the consignee's claims. Sometimes the *Aratdárs* advance money to the petty traders in the jute-growing districts, charging interest at 12 per cent. per annum on the sum advanced, on the understanding that they would send all they can collect to the *árats* making the advances. The debt is discharged out of the price realised by the sale of the jute they bring down to Calcutta. Sometimes a trader under advance sells his investment at a different *arat* or agency house; but in such a case no difference is made in the rate of interest, nor any claim urged for damages. The usual precaution taken is to seize through the *Khálgastis* the boat as it arrives at the toll-ghát, and recusancy on the part of the consigners, or of their supercargoes, leads to quarrels and appeals to the police: but this is not common.

187. In addition to the commission of one anna per maund, the seller

Charges for sales.

has to bear the following charges in cash and in kind:—

In cash.

		Ra.	A.	P.
Weighing for 100 maunds	..	0	2	0
Coolies for removing from boats	..	0	6	0
„ for placing on scales	..	0	3	0
„ for removing from carts to godown	..	0	0	9
Tallyman	..	0	0	3
Brokerage to buyer's broker	..	0	0	3
Jáchandár on each cart-load	..	0	0	9

In kind.

Jáchandár	..	2½ seers per 100 maunds.
Brokerage	..	¼ seer per drum.
Pújá	..	3¼ seers per 100 maunds.
Weighman	..	3½ „ „

The time for the payment of the purchase-money varies from three days to one month in Calcutta.

188. It has been already stated that jute is prepared from only two species of plants, but there is no difference in the quality of their respective produce. In commerce,

Varieties of jute.

however, marked differences are noticed in the productions of different places. These have led a variety of specific names being assigned to jute, of which the following are the most common, viz.—(a) *Uttariyá*, (b) *Deswál*, (c) *Desi*, (d) *Deorá*, (e) *Náránganjí*, (f) *Bákrábadí*, (g) *Bhátíal*, (h) *Karimganjí*, (i) *Mirganj*, (j) *Jangipuri*.

189. (a).—The first variety is by far the best. It is called *Uttariyá*, or northern jute, because it comes from the districts to the north of Serajunge. The districts are

Rungpore, Goalparah, Bogra, parts of Mymensing, Coesh Behar, and Julpigoori. This jute recommends itself to the trade by its possessing to the greatest extent those properties which are essentially necessary in fibre intended for spinning, namely, length, colour, and strength. It is sometimes, however, found to be weak, and it is never equal to the *Desi* and *Deswál* descriptions in softness. A superior quality of jute is produced, chiefly for domestic use, by the Hájung and Koch tribes of hill people. It comes into the market so late as November.

190. (b).—Next in commercial value is the *Deswál* jute; it goes down fairly with the trade on account of fineness, softness, bright colour, and strength. It is stated, however, to have deteriorated to a certain extent within the last two or three years from the inefficient system of drainage in the new fields where it is grown. The fibre has become shorter and more rooty, and lately weaker also. Its name implies that it is the native jute of Serajunge and its neighbourhood. Such of it as is grown on beels are called *Bílan*, and what is raised in *churs* are known by the name of *Charua*. But in Calcutta they pass under the generic name of *Deswál*. It first comes into the market in Srávana, that is about the latter end of July or beginning of August. At the present moment fresh consignments of this jute are more in demand than the medium *Uttariyá* fibre.

191. (c).—The *Desi* jute is the produce of Hooghly, Burdwan, Jessore, and 24-Pergunnahs. It is of a long, fine, and soft fibre. If its defects, which are stated to be fuzziness and bad colour, were removed, it is believed by men experienced in the trade that its market value would very much be improved.

192. (d).—The staple known under the name of *Deorá* comes from Furreedpore and Backergunge. Its name is due to a village in Furreedpore where formerly there was a large mart. The village has dwindled down to insignificance now, but all the produce of the district, as also of the neighbouring district of Backergunge, is known by its name. The bulk of the fibre of this class is strong, coarse, black, and rooty, and much overspread with runners. This fibre is used for the manufacture of rope. Its value would rise if the dealers would refrain from pouring water on the prepared fibre, which they are said to do in order to increase the weight of their consignments. Occasionally small batches of this jute are met with of a very superior quality.

193. (e).—The *Naránganjí* jute, which is brought from Aralia, Kurimgunge, and other jute centres, locally called Mokáms, of the Nárángunge mart, is mostly the produce of the district of Dacca. It is very good for spinning, being strong, soft, and long. But from some neglect in steeping, the fibre, by the time it reaches Calcutta, changes its original colour into a brown or foxy tint, which detracts from its value.

194. (f).—The finest description of Dacca jute is the *Bákrábadí* fibre, which is raised on the *churs* of the River Megna. It excels particularly in colour and softness.

195. (g).—The *Bhátíal* jute is also the produce of the district of Dacca, and comes to Calcutta from Nárángunge. It is grown on *churs*, and is called *Bhátíal* because it is imported to Nárángunge from the south or tidal side, *Bhati*, of that place. It is very coarse, but strong, and is to a certain extent in demand in the British markets for the manufacture of rope.

196. (h).—Karimgunji, in the Mymensing district, gives its name to a very fine description of jute which is grown there. It is usually long, very strong, and of good colour, partaking to some extent of the nature of the Naraingunge or Dacca jute.

197. (i).—The produce of Rungpore, though large, is generally of medium quality, and the worst kind of it comes from Mirgunje, on the Teesta, whence its name *Mirganji*. The cause of its inferiority has been stated in another part of this report (para. 96).

198. (j).—The produce of a portion of the Pubna district is known by the name of Jangipuri, so called from a small village of that name. It is of short fibre, weak, and of a foxy colour, most objectionable for spinning.

199. The fluctuation in the price of jute during the past three years has been remarkable. At Serajgunge (Pubna) superior jute, which had been sold in 1871 at Rs. 5 per maund, did not, during 1872, realise a price of more than Rs. 3-10 to Rs. 3-14 per maund (Appendix B, No. 37, p. xxvii). In the present year the prices of the different descriptions at the same mart are as follows (Appendix B, No. 36, p. xxvi):—

Best	Uttaryiá	at Rs. 3-4, 3-6, 3-8, and 3-10 per maund.
Medium	"	at " 2-12 to 3-2 "
Inferior	"	at " 1-10 " 2-2 "
Best	Charuá	at " 2-6 " 2-8 "
Medium and inferior	at "	1-14 " 2-4 "
Deswál	at "	1-10 " 2-2 "
Bílan	at "	2-4 " 2-6 "

200. In 1872 jute was sold at Naraingunge (Dacca) up to a maximum price of Rs. 4-12 per maund; but in the present year the highest price realised has ranged from Rs. 2-8 to 2-12. The inferior kinds are selling as low as Rs. 1-2 and even Re. 1 per maund.

201. The prices at Madaripore (Backergunge), the seat of the *Deorá* jute trade, varied in the early part of 1872 from Rs. 2-2 to Rs. 2-4 per maund. But in the present year it is said they have fallen as low as 14, even 12 annas, per maund (Appendix B, No. 51, p. xxxv).

202. In the Calcutta market the prices of the different descriptions of fibre during the past and present years appear to have been as follow:

		1872.		1873.	
		Rs. A.	Rs. A.	Rs. A.	Rs. A.
Uttaryiá	...	4 0	to 6 4	2 8	to 4 0
Deswál	...	3 8	" 4 0	1 14	" 3 0
Desi	...	3 0	" 3 12	2 0	" 2 8
Deorá	...	2 0	" 3 0	1 2	" 1 8
Narainganji	...	3 0	" 4 8	2 0	" 3 8
Bakrábadi	...	3 0	" 3 8	1 14	" 2 10
Jangipuri	...	2 12	" 3 4	2 0	" 2 8

Appendix J comprises statements showing the prices of jute (1) in Dacca of 18 years, (2) at Serajgunge for ten years, and (3) at Calcutta for seven years.

203. In some parts of the mofussil, such as Dacca and Mymensing, there are jute-screws whence ready made bales are sent down; but these are consigned direct to English firms; they never pass through the hands of *Aratdárs*. Of the raw material, which arrives in the form of drums or hanks, a small portion is used for local consumption and manufacture; the rest are made up into bales in the different screw-houses in and around Calcutta. The charge for pressing jute in a screw worked by manual labour is Re. 1 per bale of 300lb each, and Rs. 1-5 to 1-7 per bale of 350lb. In these presses the lower portion of the jute, which is hard and entangled with the bark and woody matter and, therefore,

cut off from the clean fibre, cannot be pressed. This portion is technically called "jute-cutting."

The charge for preparing bales in screws worked by steam is Rs. 1-8 per bale of 350lb of jute, and Rs. 1-12 and Rs. 2-8 respectively per bales of 350lb and 400lb of jute-cuttings. A list of the jute-screws now in work in Bengal is given in Appendix M, pp. lxxx and lxxxi.

204. It has been already shown (*ante*, para. 55,) that the export to Europe of jute as jute commenced in the tenth decade of the last century. It is all but certain that before that time it was also sent, but under the name of hemp or flax. From 1804 the exports gradually increased, but the shipments were generally so insignificant that no separate account of such exports was kept in the Custom House. In the year 1828-29 a separate head was assigned to it in the Custom House records, when it came up to the extent of 496 maunds. In the following year the export rose to 2,422 maunds, and ever since it has gone on increasing till it reached the large figure of 7,255,689 cwts. in 1872-73. I annex the following table to show the rate at which the trade has steadily increased :—

YEAR.	Quantity.			Value.			Average of five years' quantity.	Average of five years' value.
	Cwts.	Qrs.	Lb.	Rs.	A.	P.	Cwts.	Rs.
1829-30	304	3	0	690	14	0	11,800½	31,578½
1830-31	1,776	2	0	4,160	8	0		
1831-32	7,077	3	0	22,221	8	0		
1832-33	23,832	2	0	69,011	1	3		
1833-34	25,353	2	18	65,770	3	7		
	50,004	3	18	1,66,303	3	7		
1839-40	45,400	1	0	1,16,753	3	9	67,483	1,66,494½
1840-41	22,000	2	0	53,861	10	0		
1841-42	12,125	0	0	30,040	0	0		
1842-43	168,700	0	0	4,36,607	0	0		
1843-44	100,800	0	0	1,88,142	0	0		
	337,415	3	0	8,32,471	14	6		
1849-50	107,582	0	0	2,09,687	0	0	117,047½	23,96,211½
1850-51	81,705	0	0	1,62,024	0	0		
1851-52	68,732	0	0	1,21,285	0	0		
1852-53	117,105	0	0	2,33,329	0	0		
1853-54	215,094	0	0	4,65,632	0	0		
	585,238	0	0	11,00,067	0	0		
1859-60	215,001	0	0	5,44,556	0	0	234,053½	6,12,354½
1860-61	230,116	0	0	5,75,625	0	0		
1861-62	215,407	0	0	4,63,877	0	0		
1862-63	102,873	0	0	3,93,123	0	0		
1863-64	200,888	0	0	5,94,068	0	0		
	1,170,279	0	0	25,01,274	0	0		
1869-70	337,896	0	0	6,90,088	0	0	430,550	12,98,884½
1870-71	301,804	0	0	6,01,215	0	0		
1871-72	582,793	0	0	10,70,716	0	0		
1872-73	538,347	0	0	10,16,308	0	0		
1873-74	548,525	0	0	11,20,350	0	0		
	2,196,750	0	0	64,91,071	0	0		
1879-80	508,036	0	0	10,15,788	0	0	710,620½	25,96,661
1880-81	702,393	0	0	22,00,081	0	0		
1881-82	880,947	0	0	32,56,748	0	0		
1882-83	673,382	0	0	27,49,754	0	0		
1883-84	788,787	0	0	30,32,030	0	0		
	3,554,133	0	0	1,29,83,466	0	0		
1889-90	317,009	0	0	6,61,400	0	0	960,724	62,17,742
1890-91	761,830	0	0	20,01,339	0	0		
1891-92	1,006,443	0	0	41,07,468	0	0		
1892-93	1,310,326	0	0	27,17,360	0	0		
1893-94	1,362,106	0	0	31,11,079	0	0		
	4,848,620	0	0	1,60,88,710	0	0		
1899-00	2,850,656	0	0	1,59,80,225	0	0	2,628,110	1,33,59,180½
1900-01	2,804,203	0	0	1,63,16,886	0	0		
1901-02	2,200,232	0	0	79,19,415	0	0		
1902-03	211,738	0	0	1,05,068	0	0		
1903-04	1,764,521	0	0	93,40,889	0	0		
1904-05	74,980	0	0	1,04,375	0	0		
1905-06	2,411,312	0	0	1,38,73,457	0	0		
1906-07	60,824	0	0	1,03,180	0	0		
	15,140,660	0	0	66,25,920	0	0		

YEAR.	Quantity.			Value.			Average of five years' quantity.	Average of five years' value.
	Cwts.	Qrs.	Lb.	Rs.	A.	P.		
1866-69 ...	3,208,718	0	0	1,92,47,161	0	0	4,858,162½	3,01,60,223½
1868-70 ...	404,118	0	0	19,17,433	0	0		
1869-71 ...	3,112,220	0	0	1,62,02,040	0	0		
1870-71 ...	3,227,225	0	0	11,04,744	0	0		
1871-72 ...	3,345,081	0	0	2,39,12,442	0	0		
1872-73 ...	426,545	0	0	18,43,353	0	0		
1872-73 ...	5,145,378	0	0	3,70,04,116	0	0		
1871-72 ...	3,908,362	0	0	38,78,401	0	0	4,858,162½	3,01,60,223½
1872-73 ...	168,999	0	0	8,21,839	0	0		
1872-73 ...	5,700,430	0	0	8,77,33,623	0	0		
1872-73 ...	1,275,344	0	0	36,30,755	0	0		
1872-73 ...	278,909	0	0	9,95,892	0	0		
1872-73 ...	24,290,814	0	0	1,50,50,116	0	0		
1872-73 ...	24,290,814	0	0	1,50,50,116	0	0		

c. Rejections. d. Cuttings.

205. Originally the exports were destined almost exclusively for Great Britain, Bombay, and North America, taking only very small consignments. The exports to the first-named place rose in ten years from 496 maunds in 1828-29 to 107,582 cwts. in 1838-39. The three successive decennial periods from the last-named date show 337,886 cwts. in 1848-49, 317,999 cwts. in 1858-59, and 3,208,718 cwts. in 1868-69. In 1872-73 the exports to Great Britain amounted to the enormous amount of 5,709,436, besides cuttings and rejections, of which a total of 1,546,253 cwts. were sent to that country. The American demand has risen from 1,797 maunds in 1831-32 to 307,718 cwts. in 1872-73, in addition to 1,158,895 cwts. of cuttings and rejections. America is also one of the largest, and was for some time the largest, customer for jute-made bags (gunny-bags); but of that details will follow in the paragraph on the trade in gunny-bags (para. 235). France stepped into the mart for the first time in 1836-37, when its requirements amounted to only 3,072 cwts., which in the following year fell to 309 cwts. The first heavy demand made by it was in 1845-46, when it took 9,708 cwts., followed in the next year by 21,048 cwts., ever since which exports to that country have gradually, but not without some vacillation, increased: they amounted in 1872-73 to 187,126 cwts. Exports to Bombay have increased from 1,095 maunds in 1831-32 to 158,073 cwts. in 1872-73. The other ports to which jute is sent are Amsterdam, Australia, Cape, Ceylon, China, Italy, Madras, Pegu, Straits Settlements, and Trieste. Details of the amounts of jute sent annually to these different places will be found in Appendix H, pp. lxiv to lxix.

206. The question of freight naturally comes in connexion with exports, but as no information has been required by Government regarding it, and to a great extent it is regulated by circumstances unconnected with India, I shall pass it by.

207. As jute is almost invariably taken by the ryot for sale in hanks made up into loose bundles, the opportunities for adulteration are very few, and detection is comparatively easy. Nevertheless the great and rapidly-increasing demand for the fibre has of late led many dishonest cultivators and traders to resort to various forms of adulteration to add a fictitious value to their goods. The most prevailing practice is to mix fibres of inferior quality in the bundles of superior produce; but, as observed by Mr. Nolan, the price is considerably modified when the purchase comes to be examined, and the fraud therefore is not generally very successful.

Another form of adulteration is by water. This is done to add to the weight of the fibre. Water is either poured on dry jute just when about to be taken to the market, or allowed to be imbibed by exposure to the night dews, or by making up the hanks into bundles before the fibre is thoroughly dry after the retting process.

Baboo Ramsunker Sen, the then sub-divisional officer at Kishoregunge, says that even "clods of earth are introduced within before the fibre is coiled up into the mora bundles."

Writing from Jessore, the same officer says that *kakta*, or the fibre peeled off without previous steeping, is used to adulterate the better sorts of jute.

Mr. George, of Dacca, has given it as his opinion that the "adulteration of jute is universally practised, as bad jute is mixed with the good inside the bundles." The traders of Calcutta have found rotten fibre mixed up in the drums.

Of fibres of other than the true jute plant, which are mixed with jute, the *Mestá* (*Hibiscus cannabinus*—ante, para. 12,) and the *Dhenros* (*Abelmoschus esculentus*—ante, para. 14,) are the only ones whose names have been mentioned to us. The *Mestá* is extensively grown in the deorá districts, and its fibre forms a large proportion of the so-called *Deora pát*, which finds its way to Calcutta from the Gopalgunge mart in Furreedpore. It is a strong fibre, and has a fine colour, closely resembling jute; but it is not quite so soft to the feel as jute, and is otherwise reckoned to be inferior to it. In other districts *Mestá* is mixed up with, or bought and sold as, jute without any fraudulent motive.

The fibre of the *Dhenros* is brought in very small quantities into some of the jute markets of the Mymensing and Dacca districts, where it is also sold as jute. It is a very inferior article, and is deliberately used as an adulteration for fraudulent purposes.

The general character and appearance of the two fibres are such that neither the mahajans nor the merchants ever think of assorting the *Mestá* and the *Dhenros*; and it requires an experienced eye and hand to detect the spurious fibres when mixed up in small quantities in the hanks and drums of the real jute.

208. Taking into consideration the certainty of short food-crops in the

Immediate prospects of jute.

present year, it is not at all improbable that the ryots will grow as much of the early rice as is possible in the approaching year, appropriating thereby, to a greater or less extent, the land hitherto sown with jute. It is, I believe, quite reasonable therefore to anticipate a comparatively small outturn of fibre in the ensuing year.

209. But notwithstanding this transient gloom in the prospects of the jute cultivation, the operations of the trade are active

Future prospects.

and extremely promising. The confidence of the public in the steady and rapid progress of trade in this article is also

Names of Companies	Share.	Paid up	Closing prices.
Baranuggur Jute ...	100	100	136
Budge-Budge Jute	100	40	54
Calcutta Jute Mills	200	200	..
Scorbore ...	1,000	1,000	1,900 „ 1,950

great. I see from the share list in the public prints of the 1st December that the share of the jute Companies noted in the margin are selling at premia considerably in advance of former quotations. Indeed the trade has laid so deep a hold on the public confidence that in the case of the Scorbore Jute Company, just formed, double

the number of shares to be allotted were subscribed for in less than a week after the scheme was set afloat.

210. Taking only the present jute-growing tracts into consideration, the

Prospects with reference to area of present jute-tracts.

prospect of the cultivation in time to come may be regarded as most hopeful. The sixteen districts which include the bulk of these tracts comprise a total area of 22,498,477 acres of arable land, and out of it only 876,324 acres were devoted to jute in 1872 according to the district reports, but probably somewhat more. Leaving the excess out of consideration, as its extent cannot be ascertained, and arguing on the figures at command, were the demand for jute to double in course of the next ten years, it would only take up about one-thirteenth of the arable area, leaving the remaining twelve-thirteenths for cereals and other crops. This estimate does not include the reclaimable waste lands in the districts under notice. Their extent is vast; and as these are being rapidly brought under the plough, in reality jute will not trench upon the present fields for the food-crops to the extent shown above. Then, there are several districts where jute is not grown to any large extent now, but which have taken to its culture, and are gradually extending their area, and these will in a great measure supplement the present sources of supply. Moreover, during the time the reclaimed lands will take in occupying the place of those fields which will

be alienated from the food-crops by jute, those districts which cannot grow jute can easily raise various food-crops, and these will in the usual course of trade feed the jute-growers, whose earnings by jute would be most welcome to them. Doubtless in a country governed by custom all changes are repugnant, and a transition state of agriculture and commerce must at first produce some disturbance of the usual order of things; but under the incentive of gain, so predominant in the human breast in every part of the world, and which is of all others best able to ride rough-shod over custom, matters will settle into their new course without any appreciable inconvenience.

211. This opinion is shared in by almost all the district officers. With the outturn of 1872 in his mind the Collector of Dacca writes: "The amount of jute grown as yet is not sufficient to appreciably affect the rice market, nor would it do so were double the amount grown."

Mr. Nolan, the sub-divisional officer at Serajgunge in *Pubna*, says: "This part of the country is but little exposed to the danger of famine, and I believe that even if it were more liable to that calamity, it would be an advantage rather than otherwise to have a large proportion of the soil planted with a crop which is not grown for food. The jute might succeed where the rice failed, and then the ryot would have something to fall back upon."

"Every man," says the district officer in *Rajshahye*, "will exert himself to raise the article which has a growing demand and a ready market, and brings him a handsome return. The gains of past years will," he goes on to say, "keep the cultivators in their pitch of activity for some time to come; and they will go on with the cultivation so long as they will find it remunerative."

In *Julpigori*, which, as so often remarked, is described by the district officer as "essentially a jute-growing district," the cultivation of jute is on the increase. "It is a crop easily cultivated and returning good profit."

In the *Satkhira* sub-division of the 24-*Pergunnahs*, the sub-divisional officer writes: "There are, however, so many extensive tracts of low-land lying fallow for want of capital and labour, that jute may be almost indefinitely increased without driving rice from the sub-division for want of land." And this remark, true as regards a small area in one jute-growing district, holds good also in respect to the state of things and the prospects of the cultivation in those vast tracts in other districts in which jute has hitherto been grown, or in which it may hereafter be successfully grown.

In the report from *Purneah*, I find it stated: "I do not think that the cultivation has had the effect of decreasing the amount of cereals or other crops grown, but has simply been the cause of more land being brought under cultivation."

212. Writing of *Burdwan*, where at present jute is very scantily grown,

Districts where jute is grown in small quantities now, but where the cultivation may be extended.
Burdwan.

the district officer says: "If it be explained to the ryots that jute has engrossed the attention of Calcutta merchants as a lucrative article of commerce, they will readily employ more lands for the cultivation of this crop than they have hitherto done. If the people utilise the alluvial soil of the *Dumoodur* and *Dalkishore* by cultivating jute, I think the experiment will prove lucrative to the cultivators. But the people residing in these quarters are so indolent or ignorant, that they have not the remotest idea that such a measure will prove beneficial to them."

213. "The plant is already grown as an edible in small quantities

Ditto, *Beerbhoom*.

all over the district" of *Beerbhoom*, and though "the soil of almost two-thirds of the district is a poor soil." "the eastern third," writes the Collector, "is alluvial, and I imagine that jute would grow there, as well as in the 24-*Pergunnahs*, for instance." "Patslak," he continues, "is grown in the beds of old tanks of which the water has dried up, and also simultaneously with sugarcane." "Very little labour is required for the cultivation of the plant."

It may also in case of emergency be more largely grown in *Dancorah*, where almost under similar conditions of soil and climate it is already cultivated for culinary purposes.

214. In *Midnapore*, where the soil of the *Bar Mehals* is composed of deep alluvium, the cultivation can also be greatly extended at need.

Ditto, Midnapore and Nuddea.

Jute is already raised in the Bongong and Ranaghat sub-divisions of *Nuddea* for local consumption, and at Coomarkhali for exportation. Here also the cultivation, which is now very limited, may be largely extended.

215. The large old churs* in the eastern districts would seem to me to be admirably adapted for the growth of jute; and, although the soil and climate of the districts of the Patna Division, except Tirhoot, are represented to be uncongenial to the plant, I cannot but think that the fine *déurds* in the Ganges might be utilized with advantage, especially as the cultivation and preparation of the fibre would be carried on in the rainy months, when the hostile influence of the dry climate would to a great extent be neutralised.

216. "One cause of the depressed condition of jute cultivation in Jessore," says the Statistical Deputy Collector, "is that in the northern divisions of the district the ryots' attention is engrossed by the two most important manufactures of indigo and date-sugar. Nearly all the available land not occupied by food-grains is taken up with indigo, and the ryot finds it more profitable to plant date-trees close to his homestead. * * * On the banks of the Kumar, the Nobogonga, and the Gorai, also called the *Modhoomati*, the cultivation may, no doubt, increase, for in the adjacent marts of Modhookhali and Syedpore, situated in the Farreedpore district, close to the last mentioned river, a large trade in jute is carried on, in which some merchants of the Jessore district take an active part."

Ditto, Jessore.

The productive powers of these provinces were very recently put to the proof, but only partially, by the demand for the fibre which led to the extraordinary extension of cultivation in 1872; and the result was in every way satisfactory. Though only a very small proportion of the whole arable area beyond the ordinary extent of the cultivation of former years was then brought under jute, the supply of the fibre, even without greatly affecting the price of food-grains, so far exceeded the demand, both for local consumption and for the markets out of India, that jute absolutely became a drug in the local centres of the trade.

217. In the province of *Orissa*, where jute is already grown, but to a limited extent, and only for local use, the area of cultivation can also be very considerably enlarged, if the pecuniary interests of the ryots could thereby be bettered. In the Gurjat estates the extent of land available for the purpose is immense, and enterprise is alone wanting to utilize it.

Ditto, Orissen.

The Assistant Superintendent of the *Tributary Mehals* writes: "The jute cultivation is not considerable in the Gurjats, or in any part of this country, as the people do not know the use and profits generally derived from this trade, and consequently take no care for its cultivation. It is not likely to increase until the people understand the benefit they will derive from it. The cultivation has rather decreased in some shape than what it was ten years ago. Another reason for its decrease is that the people of the Jungle Mehals do not take much care for the improvement of the cultivation, as they can do very well without it by the use of the bark of various other sorts of trees growing in the jungles."

218. The vast unreclaimed tracts in the *Sunderbuns* offer also very eligible fields whence jute can be drawn almost to any extent to meet the necessities of an enlarged demand at any future time. Even with the saline water and with the salt

Ditto, Sunderbans.

* Pergumnah Buldakhal, which is described by the Collector of Tipperah as "an aggregation of churs," already produces the finest jute in that district.

impregnated soil of these parts, the plant thrives luxuriantly in the few grants where it has been tried, and there is no reason to believe that it will fail on land properly selected in this quarter.

219. The province of Assam, with its humid climate and moist soil, offers

Ditto, Assam.

another field to jute in its vast tracts of unreclaimed land. Its sparse population, its incomplete system of communication, and its want of capital, are the present drawbacks to its progress; but with the impetus of an extraordinary demand for the fibre, mercantile enterprise will bring about the means for removing these difficulties. As jute is not likely to realise so high a price as tea, no such system as has been introduced for tea may be found practicable, or considered expedient; but others may be easily devised. As jute is a crop which requires less care than rice—and rice is largely grown in the province—local industry would suffice to bring a very large quantity of the fibre into the market, if only the people could be roused to activity by the certainty of largely remunerative returns.

Even now "almost every native agriculturist and householder," writes the Deputy Commissioner of *Nowgong*, "has a small plot of land of not more than 2½ cottahs in area at the most, and generally of from 1½ to 1 cottah of land, for jute near their houses." * * * The people cultivate jute in their leisure hours, without taking that interest in it which they do for their vegetables.

A clear understanding of gain is alone wanting to the development of the cultivation in *Kamroop*, where jute is already grown to a small extent, and where it can apparently be grown to any extent.

In *Durrang* also jute is already grown, but only to a nominal extent, and for local consumption. The Extra-Assistant Commissioner of the Mungledye sub-division is of opinion "that jute will grow well and thrive with but little care and attention in this sub-division."

It is likewise grown in *Sechsangor*, but only for use as a pot-herb; and if inducements were held out, doubtless it would be cultivated for its fibre also.

As regards *Luckhimpore*, jute used to be largely imported into the district from Bengal till within the last two or three years. "Now, however," writes the Assistant Commissioner, "the local supply has so largely increased, I am told, as almost to shut out the foreign article altogether. The import last year from Serajunge (the only mart which imports to this district) is said not to have exceeded some 20 or 30 maunds. As the soil of Luckhimpore, as of Assam, generally is, I believe, eminently adapted for the growth of the plant, it seems highly probable, now that its importance as a staple product is beginning to be known, that we shall before long see Upper Assam exporting instead of importing the fibre."

220. The Deputy Commissioner of the *Garo Hills* writes: "I dare say the

Ditto, Garo, Naga, Khasi, and Jynteah Hills, and Cachar.

jute plant would grow very well in the valleys between the low hills, and when the Garos are somewhat more advanced in civilisation I hope to introduce its cultivation into this district." Should this experimental cultivation be successful, a like attempt might perhaps be made in the valleys of the *Naga Hills*, and also of the *Khasi* and *Jynteah Hills*.

In *Cachar*, where it is to a small extent already grown for local consumption, the cultivation can be greatly extended, if necessary.

221. New ground for an extended cultivation may also be taken up in the

Ditto, Chittagong.

Hill Tracts of Chittagong, where "the soil," says Captain Lewin (*Hill Tracts of Chittagong*, pp. 4 and 6), "is composed for the most part of a rich loam, and where in many parts may be found large and rich alluvial plains." Jute, known in those tracts as *narish*, is already grown there for use both as a pot-herb and as a medicine.

As the jute is already cultivated in these hills, I am disposed to believe it likely that it could be grown, if it is not now grown, in Hill Tipperah also. But I have no information regarding this tract to guide me in arriving at a positive opinion.

222. The soil and climate of the districts of the *Chota Nagpore* Division were believed to be generally unfavorable to the growth of jute; and the cultivation was reported

Ditto in Chota Nagpore.

to be carried on in the districts of *Maunbhoom* and *Singbhoom*, and there it was raised to a very small extent, and for local consumption only. But I find on inquiry that in *Loharduggah* the plant which yields the jute proper can not only be grown, but that it already grows wild and profusely in different parts of the district. Mr. Peppé, the Sub-Deputy Opium Agent at Chota Nagpore, wrote, before the wild plant was identified with the real jute plant, as follows:—

“In these portions of the district below the plateau, such as Palamow, Touri Birri, and the five pergunnahs, there is no reason why it should not succeed; whether it would pay I am not prepared to answer.

“On the plateau itself it could not be cultivated with success without manuring well; and if such was the case it would not answer, although it might be found useful on a small scale.”

The only drawback at present is the want of roads; but this would soon be supplied under the pressure of advancing trade.

223. Should the demand for jute at any distant date outgrow the productive powers of the Bengal provinces, there would

Ditto in Central Provinces.

readily be found new and ample sources of supply in the untried tracts of country adapted to the growth of jute in other provinces of India.

Beginning with the Central Provinces, Sumbulpore, which within the last few years has been detached from Bengal and attached to the Central Provinces, may be largely utilized for the growth of jute. The settlement officer of the district says: “Jute is grown in nearly every village in this district, but not for its fibre, as the people are not aware that it is a fibre-yielding plant. It is grown here in small quantities in the sugarcane fields, and is only known by the name of *Nalita*; but it never exceeds a height of from two to two-and-a-half feet, because as soon as it is a foot or 18 inches high, the leaves are plucked and made into *sag*, or spinage, for which alone it is grown.”

“If the people knew that the *Nalita* yielded as good a fibre as the *Ambari* or *Kaoree* (in Oorya), which also is grown partly for its leaves, but more especially for its fibre,” * * * “they would probably grow it also. I should mention that only the species *Corchorus capsularis* is grown here; and up till now I was not aware that the *Nalita sag* of this district was one of the varieties of the article styled jute in commercial language, as it is only looked upon as a vegetable, and such I took it to be.”

As far as the inquiries directed by the local Administration have yet proceeded (see Reports for 1861-62 and 1862-63), jute does not seem to have been found growing in any other district; but as the soil in the country comprised in the Central Provinces is to a large extent composed of a rich loam, it is quite probable that the cultivation of jute could be successfully introduced there, especially in those vast tracts of waste land which have yet to be brought under tillage.

224. British Burmah would next seem to present another vast field in

Ditto in British Burmah.

which this valuable fibre can be raised. According to the Administration Report for 1869-70, “the climate of the province is warm, moist, and depressing.” “The soil throughout Arakan is alluvial, mixed in places with sand.” “The soil of the delta of the Irrawaddy is very rich, and where cultivated gives a high return.” “The soil in the northern portion of the valley of the Irrawaddy was reported to be well suited to the growth of cotton; but rice is the principal cultivation.” “The soil of the upper portion of the Sittang valley is clayey, mixed with a good deal of sands.” “The soil of the northern portion of Tenasserim is alluvial, but not much cultivated, though cultivation is spreading.”

Here are the conditions of both climate and soil specially required by the jute plant though it is known to grow well in almost every description of soil. And the Chief Commissioner of British Burmah says that though “no jute is cultivated

in this province, it grows wild." In *Akyab* both the *C. capsularis* and the *C. olitorius* are found indigenous; but they are cultivated for their leaves, which are used as pot-herb. The plants also grow wild in the hill tracts of that district, where the leaves are used as an edible. In *Ramree* too they are raised for local consumption. They are also cultivated as pot-herbs in *Sandoway*, but they are not known to be found growing wild there. From a communication since received from the Deputy Commissioner of *Rangoon*, I find that both *C. capsularis* and *C. olitorius*, known under the names of *Pelaw Yine* and *Pelaw Yee*, are grown in small quantities in the *Rangoon* district, where they are "found in old *toungyas*, and more frequently two or three bushes are to be found planted close to persons' houses. They make use of the leaves for putting in curry, and do not apparently use the plant for any other purpose." In the *Tennasserim* province the *C. capsularis* is found wild, and the *C. olitorius* is cultivated in small quantities for use as a vegetable.

225. In the North-Western Provinces it is believed that the Terai at

Ditto in North-Western Provinces.

the foot of the *Kumaon Hills* may be found a suitable field for jute, the soil and climate both being there suitable from excess of moisture. In an interesting paper by Lieutenant Burgess, published in the *Selections of the North-Western Provinces Government*, Part XVIII, p. 382, I find it stated regarding the Terai: "The natural moisture of the soil and the heavy dews, combined with its richness, make it exceedingly desirable land for cultivation, little labour being required for tillage." The tract being unhealthy is but sparsely populated, and it is said to bear a "gigantic reed 30 feet or more in height," from the fibres of which the string used for stringing *charpoys* is made.

226. "The plains of the Punjab," it is said in the Administration Report for 1871-72, "may be described as vast expanses of alluvial clay and loam." * * *

Ditto in Punjab.

"The alluvial plains thus constituted are intersected by the great rivers of the province." * * * "In the sub-mountain portions vegetation is most luxuriant; lower down the rivers exercise great influence over the soil; in the immediate vicinity of the stream are tracts enriched by its alluvial soil and fertilized by its inundations." These are conditions favorable to the jute plant, and I find from Dr. Stewart's "Punjab Plants" that both the *C. capsularis* and the *C. olitorius* are found to be growing wild in the province; and systematic cultivation would doubtless contribute to the production of a quantity of fibre sufficient to help in meeting any future extraordinary demand in the markets out of India.

The Agri-Horticultural Society at *Lahore* have recently been supplied with jute seed to be cultivated experimentally in their gardens.

227. In *Bombay*, I find it said in correspondence with the Government of that Presidency, that "jute is not cultivated,

Ditto in Bombay.

* * * "at all events not to any extent, to make it of commercial importance; nor is the Government aware of its having been grown at all in this presidency, and that all jute received into or exported from *Bombay* comes from *Calcutta*." But in Dr. Birdwood's "Catalogue of Economic Products" in that presidency, I find that both the *C. capsularis* and *C. olitorius* are grown there for the fibre, which is correctly designated in the work as jute. There seems to be no reason therefore why *Bombay* should not on an emergency be made to contribute its quota of the fibre towards any future excessive demand.

228. As regards *Madras*, Dr. Hunter writes of jute "among other fibres

Ditto in Madras.

as appearing to hold out the best prospects of proving remunerative * * * as easily cultivated, * * * and growing in most parts of the presidency * * *. The demand, * * * is steady, and would probably increase if the fibre were prepared of a good quality." (*Selections from the Records of the Madras Government*, No. XXIII, p. 158.)

The Chamber of Commerce at *Madras*, writing in October 1854, said: "It is but a few years ago since the greater part of the jute used in *Madras* and in other parts of the presidency was imported from *Bengal*, and at which time the quantity grown locally was very limited. There is now, however,

nearly sufficient produced to meet the requirements of the country, and some has even been exported, from which it is to be expected, as the cultivation has been on the increase, and as there is an ample field for its further extension, there will be in time a considerable export trade in this product. The local consumption of jute is large, and before it can form a staple of export of any magnitude, the home demand must be supplied by home growth."

From a communication just received from the Government of Madras, I find that the two *Corchorii* are not cultivated in the more southern parts of the Madras presidency, at least so far as their present information extends.

In the northern part, however, extending from Guntoor in the Kristna district to Ganjam, including Coconada, Calingapatam, Chittavalsah, or Bimlipatam, and Gopalpore, the plant is cultivated to some extent, and manufactured by native weavers into rope and gunny-cloth for local use.

229. Reference has already been made (*ante*, para. 47.) to the seeds of the so-called China hemp obtained from Canton by

China jute.

Dr. Roxburgh, which turned out to be no other than the jute of Bengal. Mr. Blechynden, the able Secretary of the Agri-Horticultural Society of India, obtained in 1855 some seeds of the said hemp from Canton, and found the conclusion drawn by Dr. Roxburgh to be correct. The following brief note has been furnished to Government by Messrs. Jardine, Skinner & Co. of Calcutta, who had obligingly written to their China correspondent's agent at Canton on the subject:—

"In reply to your letter of the 4th ultimo, I am sorry not to be able to give a very reliable account about jute. The Chinamen mostly say the common hemp is the same as the Indian jute. There are two kinds of hemp; the one grown near Canton is called *Hwangma*, or yellow hemp, and is of a coarse description, usually used for making ropes; it is most grown in Sanhwi, about 20 miles from Canton, but it is not an article of export from this part. The finer hemp is called *Lookma*, or green hemp, and is most probably the jute of Bengal. This is not grown near Canton (although an old book quotes it as being grown here in small quantities, the Chinese deny it), but comes from the Hankow districts, and is used for making grass-cloth, &c. The descriptions and pictures given of the jute plant exactly compare with the Chinese hemp. I am sorry I can get no samples; but this is not the right season of the year."

As the quantity produced of the Chinese jute is not apparently large, and the Chinese have to import jute from India, the extent of which is annually increasing, no competition need be apprehended from that quarter for at least some time to come.

230. Competition of a serious kind, however, may be apprehended from North America. In some of the States of the North

American jute.

American Union the jute plant has been very successfully introduced, and has already been found to be more remunerative than cotton. It is very likely that in a short time the bulk of the requirements of the United States will be supplied by home-grown fibre, and the demand on India will fall off—as regards gunny-cloth it has already fallen off—and in time American jute will be in a position to compete with the Indian produce in the markets of Europe. Some details regarding the state of jute cultivation in America are given in Appendix N (pp. lxxxii to lxxxv).

231. All the various forms into which jute is converted by native manu-

Jute manufacture.

facture resolve themselves into three, viz. cordage, cloth, and paper, which, under different conditions and circumstances, assume very different names.

232. Of cordage the range is great, from the thinnest twist, such as is fit

Cordage.

for weaving, to thick ropes for hawsers for large boats; the intermediate grades being twine and cords of various degrees of thickness, adapted to the different economic purposes for which such articles are required. According to Babu Ramcomal Sen (Transact. Agri-Horticultural Society, ii, 9, pp. 79 and 80), jute is made into thread or twine in three different ways:—

"First.—A small bundle of fibre is either tied at some elevation to a post, or suspended from some part of the roof. Filaments sufficient for the required

thickness of the thread or twine are detached from the lower part of the bundle, and, being tied to a *dherá* or reel, are spun from the left to the right hand till sufficiently twisted. The thread or twine thus made is first wound round the body of the reel and afterwards made up into a ball called *loté*.

"*Secondly*.—The next method is by the use of an instrument called *tákúr*, which is turned upon the thigh, or the sole of the feet.

"*Thirdly*.—The fibre is also spun by a machine called *Ghurgurra*, similar in principle to the contrivance used by seamen in spinning yarn for use on board ships."

The first two methods are adopted for twine of moderate thickness, which is intended for use as cords, either in the shape in which it is first produced, or subsequently doubled, trebled or made manifold, to give the necessary thickness to the cord: coarse cloth is also made of the twist produced by this process. The second method is especially adapted for making twist for weaving fine cloth. The third is best suited for thick ropes, which are sometimes made from twelve to twenty-fold in thickness. The twelve-fold ropes are mostly used for tying jute bales.

233. Gunnycloth is made of very different qualities to adapt it for the various purposes for which it is used. For convenience of description, the different varieties, however, may be arranged under three heads; *first*, such as are thick and close-woven, like good canvas; *second*, such as are thin, dense and close-woven; and *third*, such as are thick, coarse and loosely-woven.

234. Of the first, or thick, close-woven gunny, which has the generic name of *gún*, *tát*, and *chat*, there are nine varieties, named after the different marts from which they are imported. Their names are:—*Pachágore*, *Anrabáti*, *Ráyiganje*, *Deviganje*, *Dulaganje*, *Jayaganje*, *Sáhebganje*, *Naráyanganje*, and *Fáteydá*. The best of these is the *Anrabáti*, which for fineness and density of texture, and uniformity of make, far excels the others. All these varieties, however, have their superior, middling, and inferior qualities, and these, in trade language, are known as Nos. 1, 2, and 3. No. 1 is sufficiently dense, for packing rape-seed, linseed, poppy-seed, and other small grains, as also sugar. It was formerly known by the name of *chikanganí*; but that name has now been assigned to first quality gunnies prepared in European mills. No. 2 is fit for bags for rice, vetches, and other seeds of a larger size than linseed and the like. No. 3 is narrower than the last, but it is purchased largely by the Nákhodás for packing rice, and also for the outer covering of sugar when double bags are used, and this is frequently the case.

235. The thin, close-woven fabric is common in parts of Maldah, Dinagore, and Rungpore only, and also among the Cooch and other aboriginal tribes near the foot of the Himalaya, where it is used as a garment by the poorer classes of women. It is known by the name of *mekli* by the people of the northern districts generally; but in Darjeeling, it has the local name of *dhokrá*. In Cooch Behar a variety of *mekli* is made of jute and cotton mixed; this is commonly dyed of a blue colour with white and red stripes, and is used to sleep on. There is a superior description of this, which is used as wearing apparel.

236. The coarsest kind is ordinarily used for sails for country boats, and for packing large bulky articles, or as outer coverings for articles enclosed in cloth or fine gunny. This coarse cloth is known by the name of *gún-chat*, i.e., *chat*, or *pát*-made cloth adapted for sails, *gún*. At Dacca it is called *káchá chat* or immature gunny, and is there used principally for making bags for packing betel-nuts.

237. The ordinary mode of weaving gunnies for bags and other coarse purposes is thus described by Babu Ramcomal Sen in the paper noticed above:—

"Seven sticks, or *chattee* weaving-posts, called *taná pará* or warp, are fixed upon the ground, occupying the length equal to the measure of the piece to be woven, and a sufficient number of twine or thread is wound on them as warp, called *taná*. The warp is taken up and removed to the weaving machine.

Two pieces of wood are placed at two ends, which are tied to the *ohari*, and *okher*, or roller; they are made fast to the *khoti*. The *belut*, or treadle, is put into the warp; next to that is the *sarsul*; a thin piece of wood is laid upon the warp, called *chupari* or regulator. There is no sley used in this, nor is a shuttle necessary; in the room of the latter a stick covered with thread, called *singá*, is thrown into the warp, as woof, which is beaten in by a piece of plank called *beyno*, and as the cloth is woven it is wound up to the roller. Next to this is a piece of wood called *khetone*, which is used for regulating and smoothing the woof; a stick is fastened to the warp to keep the cloth straight."

Except where superseded by foreign implements or machinery, it is believed that the manufacture of jute cloth by the people is still carried on more or less after the method above described. The finer varieties of *meklis* are, however, woven very nearly in the same way as ordinary cotton cloth.

238. The varieties of thick gunnycloth noticed above are what are current in the Calcutta market; but in the Mofussil there are other names current, and the sizes of which they are made also vary, and some of these are noticed in the following extracts from the district reports:—

Local varieties of gunnies.

Kishorgunge.—"Four kinds of bags—*maul*, *chala*, *mona*, and *khuti*, are manufactured. *Maal* is two and half cubits in height. It is made of a piece of gunnycloth five by two cubits. A *chala* is one and half cubits in height, and made of a piece of gunnycloth three by one-half cubits. *Mona* is a bag of smaller size, and is made of two cubits of gunnycloth by three-fourths of a cubit. A *khuti* is half a cubit in height. It is made of one cubit of gunnycloth by six inches. Two seers of jute is used to a *maal*, one seer to a *chala*, six chittacks to a *mona*, and three chittacks to a *khuti*. A *maal* is sold at five or six annas, a *chala* three annas, a *mona* at four pice, and a *khuti* at two pice."

Hooghly.—"Ropes, gunnycloth, and gunnybags, are the only descriptions of articles made of jute in this district. The extent of the manufacture of gunnycloth has been much reduced since 1870, when the demand for the article in the American market stopped. While there was such a demand, the uniform breadth of the gunnycloth throughout the district was 45 inches; but the breadth has been now generally reduced to 26 or 27 inches, to adapt the cloth to the manufacture of gunnybags. Gunnybags are manufactured only to a small extent in this district; and the manufacture of the article in large quantities by European agency at Barranugger, Mahesh and Gurepa, has greatly put down native enterprise in this respect."

Darjeeling.—"Dhokra, measuring about two and half or three yards long and half a yard wide when first turned out, three of these strips are sewn together and make, what is termed, a *dhokra* or *floor cloth*, or is spread on a bed; the poorer classes sometimes make garments of it. *Tunghee*, or a fine description of gunnybag, measuring about five feet six inches by two feet three inches in the piece; this is doubled, and sewn along both sides, thus making a bag, about two feet nine inches by two feet three inches, weighing from three to three and half seers. *Tunghee* is used chiefly as pads for pack-bullocks and tattoos. *Borah*, or the ordinary gunnybag, measuring five feet by two feet in the piece, and when sewed up give a bag two and half feet by two feet, weighing from one and half to one and three-quarter seers. The stuff is sewn into bags by the purchaser."

Dinapore.—"Gunny sheets.—The gunny is not usually made into bags here, except for local use; it is made into sheets, the size being five feet four inches by two feet five inches, which forms into a bag when the ends are sewn up, half the above length and the same width: these bags weigh about one and a half seers."

Rungpore.—"The manufacture is exclusively carried on by women, especially Hindus of Rajbungsi caste, who twist the thread, and weave the bags at their leisure hours. These bags are woven by a simple process called *punja benow*. The bags are generally eight feet long and three feet broad. The *táts* (long pieces) used to prepare purdahs (screens) are made thirty feet long and one and a quarter feet broad."

Midnapore.—"The articles manufactured from jute are principally—(1) gunnybags; (2) string, cord, and rope; (3) *kampa*, a net-like bag for carrying wood or hay on bullocks; (4) *chat*, a strip of stuff for tying bales of cotton or cloth; (5) *dola*, a swing on which infants are rocked to sleep; (6) *shika*, a kind of hanging shelf for little earthen pots, &c.; (7) *dulina*, a floor cloth; (8) *beera*, a small circular stand for wooden plates, used particularly in *poojaks*; (9) painters' brush and brush for white-washing; (10) *ghunsi*, a waist-band worn next to the skin; (11) *gochh-dari*, a hair band for women; (12) *mukbar*, a net bag used as a muzzle for cattle; (13) *parchuta*, false hair worn by players; (14) *rakhi-bandhan*, a slender arm-band worn at the Rākhi-pournima festival; and, (15) *dhup*, small incense sticks burnt at *poojaks*."

239. The use of jute for the manufacture of paper will be noticed lower down in connection with materials for the manufacture of paper (paras. 251, 252, and 253.) The process followed does not differ materially from that adopted for the same purpose with old rags, &c.

240. In the following tabular statement are shown the various articles into which jute is now manufactured, either for local use or for exportation, and the quantities of the fibre consumed in the manufactures. The figures are necessarily more or less approximate, it being impossible to obtain correct returns on the subject. Some of them are on their very face grossly incorrect.

Statement showing the qualities and quantities of jute manufactured, and description of manufactures in the Districts of Bengal, where manufactures exist.

Districts.	Fibres used in manufactures.	How much and what fibres used in each district.	Description of manufactures.	How disposed of.
Burduwan ...	Both good and inferior jute	350 maunds of good, and 5,000 maunds of inferior jute	Gunny cloth and bags, twine and ropes.	Sold for local use and exported to Calcutta.
Boerhoom...	Desi, Doolerung and Narangunge jute.	About 600 maunds...	Gunny bales only	Exported
Midnapore . .	Koshla, Nankarkani, Kanra jute, &c., &c.	Cannot be estimated	Gunny, ropes, strong cord	Gunny bags chiefly exported.
Hooghly ...	Desi jute	120,000 maunds annually...	Ropes, gunny cloth, and gunny bags.	Exported.
24-Pergunnahs* Jessore ...	Jute	840 maunds	Gunny and twine	Exported.
	Ditto	780 maunds	Gunny for bales and sails, twine and ropes.	Sold at bāts, and exported to Backergunge.
Rangpore ...	Ditto	50,157 maunds	Paper, gunny bags, and tafs.	Exported and locally used.
Muldah ...	Ditto	25,000 maunds	Gunny cloth, paper, and thread.	Sold at bāts, and locally used.
Pubna ...	Baboon, Hemtal, Shoynee, Mesta and Desi.	1,350 maunds	Gunny cloth and chats	Exported and locally used.
Dinapore ...	Jute	Impossible to give	Gunny and twine	Exported and locally used
Cooch Behar ...	C. Capsularis	Not known	Coarse and fine gunny cloth and mekli cloth.	
Darjeeling ...	Red, white and Marah, Emleh and Chera-mara.	Hardly possible to give	Gunny cloth, fishing nets, and rope.	Locally used, and surplus sold at bāts.
Jalpiagore ...	Jute	One-fourth into gunny bags.	Gunny bags	One-fourth locally used, and three-fourths exported.
Dacca ...	Mesta and Copehta for paper, inferior jute for other purposes.	30,000 maunds	Rope, bags, paper, sails, twine, and gunny sheets.	One-fourth locally used and three-fourths exported.
Mymensing ...	Greater proportion of inferior jute.	12,000 maunds	Gunny bags and paper	Locally used.
Backergunge ...	Ditto ditto		Gunny bags and paper	Locally used and exported.
Furreedpore ...	Desi, Bogi, Belun, Mesta		Gunny sail, twine, and cord	
Chittagong ...	Jute	1,200 maunds	Rope and gunny	Locally used.
Tipperah ...	Ditto	2,125 maunds	Gunny bags	Locally used and exported.
Noakhally ...	Inferior jute, but Mesta for paper.		Gunny ropes and paper	Locally used.
Bhargulpore ...	Jute		Strings	Locally used.
Cuttack ...	Ditto	500 maunds	Gunny cloth, rope, and paper.	Locally used.
Sylhet ...	Ditto	405 maunds	Gunny bags, and gunny cloth, sheets.	Locally used and exported.
Moorshehabad	Ditto	38,000 maunds	Ropes, gunny bags, sack-cloth, packs for bullocks, and nets.	Used locally.

241. Little need be said here about the manufacture of jute in local English mills. There are six mills worked by Manufacture in English mills. European machinery and agency, now in existence in Bengal, and they belong to the following Companies:—

Baranagore Jute Mills Company.
Serajgunge Jute Company.
Calcutta Jute Mills Company.

Serampore Jute Mills Company.
Gouripore Jute Company.
Fort Gloster Jute Manufacturing Company.

With the exception of the factory at Serajgunge, the remaining five mills are situated in the neighbourhood of Calcutta. The number of looms in work in these factories range from 100 to 500, and the total number is about 1,500. Most of these mills are increasing the number of their looms, and new mills are in course of construction for the Budge-Budge Jute Mills Company, the Seebpore Jute Company, the Champdani Company, the Sealdah Company, and the Soora Company.

The mills already at work consume about 700,000 maunds of the fibre annually. When the new looms and mills will be at work in course of the next year, the consumption will rise from 40,000 to 50,000 tons per year. The manufactures turned out by the existing mills consist of wool-packs, twill-bags, and plain bags, of which 25 per cent. are reserved for local use, and 75 per cent. are exported to Australia, Burmah, Colombo, Madras, and Bombay.

242. The quantity of manufactured jute exported during the past ten years is shown in Appendix L (pp. lxxvii and cxxviii). It shows an increase of gunnies from 28,122,524 pieces in 1863-64, to 32,767,930 in 1872-73. The increase in the export of jute, twine, and rope during the same period has been from 647 cwt. to 5,051 cwt. Originally the Americans were the largest buyers of gunny-cloth, but their demand has fallen from 7,195,409 pieces in 1866-67, to 1,914,104 pieces in 1872-73. This falling off has, however, been compensated several fold by increased exports to Bombay, Burmah, and other places.

PAPER-MAKING.

243. I now proceed to submit, with reference to orders of the Government of India in the circular letter No. 129, dated the 26th January 1873, the following remarks on the various materials available for the manufacture of paper and paper-making in Bengal.

244. The materials originally used by the Hindus for writing were leaves and bark. The former were probably the earliest used, and from them letters in Sanskrit were named *putra*, literally "leaf," though the secondary meaning of letters, and latterly of newspapers, have now been intimately associated with it. When leaves and bark first came into use, is still a moot question; but, as very ably pointed out by the late Dr. Goldsticker, in his learned essay on Pāṇini, the time must date from many centuries before the Christian era. What the plants were from which the leaves were taken it is impossible now to determine. Within the last twelve hundred years or more three species of palm, viz. the *Borassus flabelliformis*, the *Corypha taliera*, and the *Corypha elata*, have yielded the bulk of the writing material for the Hindus. Before that the inner bark of the bhurj tree (*Betula bhajpatra*) was most in use, and allusions to it are to be met with in works two thousand years old. The early Aryans, in their settlements in the Punjab and along the foot of the Himalayas, must have found this material ready at hand, and employed it for various purposes of domestic economy, as well as for writing. At present its use is limited to the lining of hooka-snakes and to writing amulets on, which are enclosed in gold, silver or copper beads, and borne on the person as charms against evil influences. For this purpose the bark is held in high esteem on account of its lasting quality, for though thin and fragile to look at, it lasts for centuries without decay: in one instance a piece of bhurj bark about two thousand years old was found in the sanctuary of a Buddhist tope. Simultaneously with leaves and bark, the Hindus have used paper for writing for many hundred years. I am informed that Sanskrit MSS. written on paper have been frequently met with which date over five hundred years. How long before that paper first came into

use in India I have not been able to ascertain. Block-printing on paper got into currency in Thibet in the sixth or seventh century of the Christian era; and in Cashmir the use of paper and papier-maché were became common at least twelve hundred years ago. It is well known that the Chinese first discovered the art of making paper with vegetable fibres, reduced by maceration and pounding into a pulp, about two thousand years ago, and the Thibetans must have learnt it from the Chinese. It is probable that the Hindus of the plains got the art from the Thibetans directly, or through the medium of the Cashmiris,—most likely from the latter, as Cashmir paper has always been held in the highest esteem in this country. The exact date when this took place I know not; but this must have taken place long before the last five hundred years, as the extant MSS. are said to be written on paper of a very good quality, and much time must have elapsed from the beginning of the art to the time when it attained a high stage of perfection, such as is evinced by the MSS. in question.

245. No information is available regarding the process which was formerly adopted by the Hindus in manufacturing paper. In the Ain-i-Akbari a notice occurs of variegated paper, the mode of preparing which was introduced by a celebrated scribe in the time of Akbar; but no detail is given of the manner of preparing it.

246. In 1832 the native manufacture was extensive, and, according to Dr. Carey, who wrote an article on the subject for publication in the "Transactions of the Agri-Horticultural Society" (Vol. II, p. 809), was carried on in the districts of Burdwan, Balasore, Patna, Shahabad, Behar (now Gya,) Dinagepore, Daeca, Moorshedabad, and Calcutta. The quantity then made was so large that after supplying the wants of Bengal, it left an ample margin for exportation as an article of commerce to the Upper Provinces and the countries to the east. The paper made in the Burdwan district then carried off the palm for its superior quality.

247. The materials used in this manufacture in 1832 consisted, according to the authority quoted above, of "(1) flax or hemp; (2) jute; (3) old, worn-out gunny bags, purdahs, sails, &c.; (4) old paper and cuttings of the edges of paper collected from book-binders and paper-makers; (5) damaged cotton; (6) rope cables, &c.; (7) nets; and (8) oakum."

248. The native method of manufacture is thus described in detail by Babu Ramcomul Sen in the "Transactions of the Agri-Horticultural Society" (II, p. 89):—"The bags or flax is cut or torn to pieces and thrown into a large gumla or earthen vessel and kept there dipped in water for a day or two. It is often agitated, and now and then the water is changed, when the dirt with which these articles are generally impregnated goes off; the fibres are then taken out and the water squeezed out of them, after which they are exposed to the sun to dry.

"The thread, or fibre, is then put into another gumla, with a quantity of fresh hemp and old paper mixed with a quantity of lime, and burnt sajee-motee dissolved in water, and left there for some days, till it becomes soft or partially rotten, when it is taken out of the vessel and sent to the pounding machine called dhenkee or pedal, which is made of solid timber 10 to 16 feet long, and 12 to 25 inches broad, and of a proportionate thickness. The mortar is constructed either of stone, or it is carved out of a piece of timber and lined with iron; the pestle is made of iron or wood covered with an iron lid called goola. The machine is drawn by from 2 to 6 men, and there is a man who feeds it with materials.

"When it is reduced to a sufficient fineness or liquidity, it is formed into lumps or parcels sufficient for one day's work.

"The pulp is then thrown into another gumla, diluted with clear water, and allowed to remain there for some time. If the pulp is not clear enough, the water may be changed without agitating its contents, which settles at the bottom. A quantity of lime and water of sajee-motee is afterwards thrown into it, and agitated repeatedly by a paddle-formed wooden stick.

"The operator or maker sits on the brim of the reservoir, and lays a square frame called chowka made of wood, upon which the sieve made of fine split bamboo, woven with horse's hair, termed chatree, is placed. He first agitates the water soup. There are two sticks called chapá and hachka, by which the chatree is held close to the chowka. He dips the sieve into the gumla and draws it deep enough so that the machine is carried through the middle, and raised upon the surface. It is then gently shaken in order to equalize the substance that settles upon the sieve, upon which a thin layer is collected. When equalized and settled, he raises it from the gumla and lays it upon a piece of square board kept on his left side, and so continues the operation until from 200 to 250 sheets or layers are laid upon one another. The board, with the layers on, is then removed to the drying place, and another board placed upon it with a heavy stone or log of wood laid over the same, and allowed to remain in that state during the night to enable the water to exude and the paper to dry.

"The next morning the sheets are taken up one by one and laid upon matted walls or clean grass plats to dry. When dried, they are gathered and made into parcels of from 50 to 100 sheets each, and removed to the beating machine called pitna, or a piece of thick timber half buried in the ground, the upper part of which is concave, plain and smooth, like the washer's cloth-beating log. The sheets are laid upon the wood with one hand, and a mallet held by the other, with which the paper is beaten, softened, and smoothed.

"The next process is the sizing. A quantity of fine Arwal rice or wheat is first pounded, strained, boiled with water, and strained again through fine cloth, and kept in a pot; then large boards, well smoothed or planed, are placed upon the ground, the sheets of paper are laid flat one at a time and damped with the paste. This part of the work is generally done by the females and by old men. It is performed with the palm of the hands with dry tipula (*Luffa unara*) or brushes made of soft fibres for that purpose.

"The sheets are dried in the shade, or in a mild, gentle sunshine, and are then collected and put into a press: if the paper be of fine quality. They are afterwards rubbed or glazed with gila (seeds of *Mimosa scandens*), shells or stone balls; the edges are then cut off, and the sheets folded and bundled into quires and lotted into guddies, and corges, in the usual manner: 24 sheets make a quire, and 10 quires a guddy."

The class of men employed in this manufacture were called, after their trade, *Kagzees* or "paper-makers."

249. I shall now reproduce from Martin's Eastern India (I, p. 333,) an account of the local manufacture in the Behar district, where it had formerly attained some extent:—

Ditto in Behar.

"A considerable quantity of paper is made at Behar and Arwal. It is whiter than that made in Ronggopur; but has all its other imperfections, and that of Behar especially is less durable, while the least dampness in the air occasions common ink to sink, so as to form almost illegible blots. It is only ink made of the cakes prepared as above-mentioned that can be used with such paper. At Behar the paper most commonly made is that called *dufturi*, which is $19 \times 17\frac{1}{2}$ inches a sheet, and is that used in common business; but other kinds of a larger size and rather superior quality are made, when commissioned. The materials are old bags of the *Crotalaria juncea*. These are cut into small pieces, and having been soaked in water are beaten with the instrument called *dhenki*. The pulp is then put on a cloth strainer, washed with water, and dried on a rock. This substance is then put into a cistern with some ley of soda, and is trodden with the feet for some hours, after which it is in the same manner washed and dried, and these operations with the soda are in all performed six times. The bleached pulp is then put into a cistern with a large quantity of water, and is diligently stirred with a stick for about three-quarters of an hour, when it is wringed off into sheets as usual. The moist sheets are stuck on a smooth wall and dried. Having been rubbed with a paste made of flour and water, they are then smoothed by placing them on a plank and

rubbing them with a stone. The expense and profits of making seven reams are as follows:—

“Forty-two seers (86½lb) of old bags, Rs. 2; 42 seers impure soda, Rs. 2; 42 seers lime for making the ley, Rs. 1; labourers for beating with the *dhenki*, Re. 1-12; a man to stir about the materials, As. 8; pasting and smoothing the paper with a stone, As. 5; flour and firewood for making the paste, As. 2-6; drying the sheets, As. 4; cutting the paper, 6 pice.—Total Rs. 7.

“The ream consisted of 10 quires, each containing 24 sheets, and sells by wholesale at Rs. 8-12, so that the maker has Re. 1-12 profit. He does nothing but form the sheets, taking them as usual from the cistern on a frame, which retains the paper, and allows the water to escape. He makes about one ream a day; and, if he works 315 days in the year, he will earn about Rs. 80 a year; and, in fact, these people are in easy circumstances. In the 30 houses at Behar are 100 men, and in the 13 divisions exclusive of Arwal, that are in the district, there are probably 40 houses, or in all 140 men, who, at the rate above mentioned will make paper to the value of Rs. 32,000 a year.”

250. The paper produced on the opposite side of the Sone river in Shahabad was known as Arwal paper, which, although made of the same materials, was whiter and more durable than that made at Behar, and was commonly used by Persian writers all over Bengal. Each maker usually manufactured five bales in the year, and each bale contained 20 reams.

“Two bales of the first quality at Rs. 4 a ream, Rs. 160; 2 bales of second quality at Rs. 3-8 a ream, Rs. 140; 1 bale of the third quality at Rs. 2-8 a ream, Rs. 50.—Total Rs. 350.

“The total paper therefore made by 20 beaters will be worth Rs. 7,000. The following is the statement that I procured of the annual expense attending each beater:—

“To 2,620 seers (46 S. W.), or about 3,069lb of old bags or nets, which are still better, Rs. 57-8; to soda 2,340 seers, or 2,762lb, Rs. 45; to lime, the same quantity, Rs. 30; to flour for paste, Rs. 5; to cloth for strainers, baskets, &c., Rs. 2; to moulds, or frames, Re. 1-3; to labourers for beating, &c., Rs. 80; to working off the sheets, Rs. 25; to drying and smoothing, Rs. 7-15-6; to pasting, Rs. 5; to cutting and packing, Rs. 15.—Total Rs. 286-6-6.

“The neat profit, therefore, on each beater, besides paying every person for his labour, is Rs. 33-9-6. The materials were divided into five equal shares, each capable of making one bale. Under the beater of the implements is a small cistern, the bottom of which is stone. In this is at once put the fifth part of the old bags or nets, with a large quantity of water, and it is beaten for six days, after which it is washed on a strainer. It is then beaten two days with a ley of soda, washed and dried. This beating with the ley of soda is done in all nine times, after each of which the pulp is washed and dried. In dry cold weather each subsequent beating occupies eight or ten days; in the hot season five or six days are sufficient. The paste, when thoroughly bleached, is formed into sheets as usual. All the sheets formed in one day are in the evening placed under a plank, on which two or three men sit for about an hour to squeeze out the water. It is then stuck on a wall, and falls off next morning when dry. It is then pasted on one side and dried, and then it is pasted on the other side and dried, rubbed with a stone, and cut square. All the paper-makers here also are Mahomedans. The Mohurutdars are persons who smooth paper by rubbing it with polished glass, which obliterates entirely the marks of the frame, as is done by hot pressing, and gives the surface a glossy smoothness. This operation costs from eight to ten annas a ream.”

“A considerable quantity of paper is,” writes Mr. Martin, (*Eastern India*, Vol. I, p. 544,) “made here. In Saher, opposite to Arwal, 60 beaters belonging to 40 houses were acknowledged; and 30 beaters in 20 houses are admitted to be in the Boraong division at no great distance south. The account given in respect to the quantity made entirely coincides with that procured at Arwal, that is to say, each beater makes annually 100 reams (gaddis) of paper; but the workmen here, instead of three qualities, divide it into four, the three lower of which are of the values specified at Arwal, while the highest is worth Rs. 5 a ream. They make four bales (ghani) in the year, each bale containing 25 reams.”

"First bale of the first quality at Rs. 5 per ream, Rs. 125; second quality at Rs. 4 per ream, Rs. 100; third quality at Rs. 3½ per ream, Rs. 87-8; fourth quality at Rs. 2 per ream, Rs. 62-8.—Total Rs. 375.

"Expense attending the above:—2,500 seers (44 S.W.) or about 2,823 lb of old bags, Rs. 62; soda (sagi) 1,600 seers, or 2,108 lb, Rs. 40; lime 1,400 seers or 1,582 lb, Rs. 24; flour for paste 700 seers or 791 lb, Rs. 11; cloth for strainers, Rs. 5; earthen tubs and pots, Rs. 1; bamboo baskets, Rs. 4; mats, Rs. 2; ropes and twine for packages, Rs. 2-8; fuel for boiling the paste, Rs. 16; 4 men to beat and wash, Rs. 100; one man occasionally to stir the material, Rs. 3; preparing and applying the paste, Rs. 12; smoothing, cutting, and packing, Rs. 10; working off the sheets done by the master, Rs. 25; cutting the bags, Rs. 1; mould or frames, Rs. 4; putting the sheets on the wall to dry, Rs. 6; watching the paper while drying, Rs. 4; horsetail hair for separating the sheets from the wall, 12 annas. Profit Rs. 41-12.—Total Rs. 375.

"The expenses here are no doubt exaggerated, as will be evident from comparing them with the account given at Arwal; and the owner of the beater, besides the Rs. 41-4, has always the Rs. 25 for forming the sheets, while most of the allowances for preparing and applying the paste, for smoothing, cutting, packing and drying, are gained either by him or by the females and children of his family. According to this estimate, the 90 beaters will annually prepare 9,000 reams, worth Rs. 33,670, but more is allowed to be exported by the traders of this district, persons not at all apt to exaggerate their dealings, and the number of beaters is probably at least 100."

251. In Dinagepore paper was made about the year 1838 entirely by

Ditto in Dinagepore.

Mahomedans, who seemed to have introduced the art into the district. Before their arrival the natives, in their writing, appear to have used only the leaves or bark of trees. In this district there were between 80 to 100 families employed in making paper sufficient to meet the then existing demand. The quality was very inferior, even to that made near Calcutta. It was brown, rough, uneven, spotted, fibrous, full of holes, and brittle; ink sunk into it, and insects devoured it with avidity. The people who made it required little or no capital, usually carrying it themselves to the markets just as made, and the petty traders who bought it afterwards sold it by retail. The sheets were usually 24 inches long by 16 wide, and were doubled twice; 24 sheets made a quire, and the manufacturers usually sold 10 or 12 quires for a rupee.

"The material is the pat in its rough state. A sufficient number of bundles is thrown into a large jar that is sunk in the ground, and they are covered with a mixture of lime and water, in which they are allowed to soak for from two to nine days, according to the heat of the weather; the hotter that is, the less time being required. The bundles are then dried, and the lime that adheres is separated from them by beating and shaking. They are then moistened with water and beaten with a dhonki, which has a cap of iron, and falls upon a stone slab. While it is beating, the pat is occasionally moistened until it is reduced to a kind of pulp. This part of the operation, which is the one attended with labour, is performed entirely by the women. The pulp after coming from the mortar is thoroughly washed, and a portion of it is thrown into a wide-mouthed vat made of potter's ware, that is sunk to the level of the yard. A large proportion of water is added, and they are stirred until the pulp is properly diffused; but little pains is bestowed on this, which seems to be the chief cause of several of the imperfections that are in the manufacture. In fact the pulp, with a very little stirring, is allowed to soak four or five hours, and is then wrought into paper. The workman's mould is made of bamboos split fine and tied together parallel to each other, and this is extended by a movable frame, made also of bamboo, which serves as a ledge to confine the pulp. The workman holding his mould with one hand stirs up the pulp with the other; then immerses his mould, and takes up a quantity sufficient to make a sheet. When he has allowed the water to escape he lays aside the frame, and turning over the mould, places his new sheets of paper above those that he had previously made, and he repeats the operation until the pulp in the vats is exhausted. In this heap the paper is allowed to dry. It is then taken sheet by sheet and immersed in a decoction or starch made of rice,

and having been dried is placed on a smooth plank, and rubbed with a round stone."

252. According to the Collector of Dacca, paper is now made in that

Ditto in Dacca.

district according to the following method :—"The *mesta* fibre is steeped in lime-water* for three hours, and then kept in heaps in that wet state for a day. It is next dried, cleansed, and pounded in a *dhenki*, and then placed in gunny bags, washed in clean water, and put into an earthen pot containing water, and churned by two men until the fibres are destroyed. The mixture is then taken up in small quantities in a *sapurm*, or bamboo sieve, and shaken; the pulp remaining in the sieve forms a sheet of paper. The sheets of paper thus prepared are kept in heaps for a day, and then dried, sheet by sheet, in the sunshine, after which they are cut and trimmed and rubbed with a paste made of unboiled rice and again dried. Finally they are made smooth with a stone and folded up."

* 20 seers of mesta.
3 " of lime.
20 " of water.

When colour is required arsenic is mixed with the paste employed in sizing the paper.

Five quires of paper can be made with one seer of *mesta*.

One man can make a ream of paper in four days.

253. The process is much the same in Rungpore, though there the real

Ditto in Rungpore.

jute is the material instead of the fibre of the *Hibiscus cannabinus*, as in the last named district. "Twenty seers of jute are mixed with ten seers of lime, and kept in a *pucka* vat for one day under water. On the second day the jute is taken out, twisted to squeeze out the water, and kept in the shade for four days. On the sixth day it is exposed in the sun; and on the seventh it is again mixed with two seers of lime, and kept in the vat under water for four or five days, and then dried again, when it undergoes a process locally known as *doom*, ডুম, viz., that it is cut into pieces six inches long and well cleaned.

"When the jute becomes decomposed, it is pounded continually for three days in a *dhenki*; six persons work at the *dhenki*, and two are employed to turn the stuff in the mortar. The process of working the *dhenki* is known by the name of *par*, and that of turning over the stuff in the mortar by the name of *alli*. When the stuff is well pounded, it is taken near a sheet of water, laid on a bamboo mat with a layer of grass under it, and then trodden upon for one day by two persons, whilst a third pours water on it. The mat is laid over grass to prevent the stuff from being soiled with mud.

"This process is known by the name of *kuchba*, and when it is over, the stuff is deposited in a second *pucka* vat, full of water to the brim, and beaten with a bamboo stick for one day. A little oil, say half a tolah, is poured on the water to enable the pounded substance to settle down to the bottom of the vat. The stuff is then gently stirred with a stick till a very thin layer rises to the surface. This layer is taken out by means of an instrument called *chanch*, and deposited on the ground. This instrument (*chanch*) is made of bamboo sticks neatly and slenderly prepared, and tied together in the form of a *chick*. The size of this instrument is as large as the paper itself. When the layers so taken out have accumulated, so as to form ten or twelve quires of paper, they are put under pressure for the purpose of expelling the water. They are then suspended, sheet by sheet, on a *tatti* to be dried. When the sheets become sufficiently dry, they are taken down from the *tatti*, brushed with *lai* on both sides, and exposed in the sun. The *lai* is a paste made of boiled rice, and the brush consists of *thasa*, a sort of fruit. After the brushing, the paper is rubbed with a heavy stone over a plank in order to give it a gloss. The borders are then cut by an instrument called *bonti*, a large knife shaped like an eraser."

The quantity of materials above stated would produce four reams of paper of a very coarse kind, each ream weighing five seers. The selling price is not, however, stated.

The cost of preparing four reams of paper is as follows:—

	Rs.	A.
Twenty seers of jute	...	1 4 0
Twelve seers of lime	0 4 0
Rice for lai	...	0 8 0
Eight thusas (brushes).	...	0 0 6
Udda (a stick)	...	0 0 3
Oil	...	0 0 3
Two labourers for lining	...	0 4 0
One labourer for drying	...	0 2 0
Two labourers for preparing doom.	...	0 4 0
Twenty-four labourers for grinding.	...	2 4 0
Three labourers for washing in the river	...	0 6 0
Six do. for taking up the layer	...	1 2 0
Three do. for brushing	...	0 6 0
Two do. for rubbing	...	0 4 0
Two do. for cutting the borders	...	0 4 0
Total	...	7 5 0

254. According to the local report from Seesaugor, it appears that it is known in that district that paper can be produced from the fibre or bark of several varieties of the Indian fig-tree, and that a coarse quality of paper was manufactured from such materials in the days of the Ahom kings of Assam. At the present day the manufacture is extinct in the districts of the Assam division, except Lukhimpore where paper is said to be made by the Kamptees from the leaves of the *jori bor* tree, probably the Indian fig-tree, spoken of in Seesaugor. But the process of manufacture is not described. The local produce, however, is stated to be gradually retiring from the market before the Serampore paper, which is selling more cheaply.

255. In Darjeeling an experimental manufacture of Nepal paper from the paper plant was attempted in 1841, and carried out with very successful results, the paper produced being pronounced by Dr. Campbell, then Superintendent of Darjeeling, to be of excellent quality. (Journal of the Agricultural and Horticultural Society, Vol. 1, pp. 210-221, 273.) The manufacture was then, however, considered to be rather costly; but the cost was stated to be susceptible of reduction. When and for what reason the manufacture of Nepal paper was abandoned, I am unable to say. At any rate the paper that is now still manufactured in the district is stated to be made, as in some other districts, from the jute fibre only.

256. At the present day the industry is followed more or less in 28 out of 53 districts in Bengal, though the superior quality and cheap price of European paper and paper locally made after the European method, are gradually displacing the native production in the markets of the country. In Burdwan, where the finest quality of country paper was known to be made in 1832, the manufacture has now been entirely abandoned owing probably to its vicinity to Calcutta, whence the local wants of the district are very cheaply supplied. On the other hand, in the Hooghly district, which is nearer still to Calcutta, the art is, notwithstanding the manufacture in the jail and the more powerful competition of the Bally mills, still practised at some places with so much success that to a sample of the local manufacture a prize was awarded at the Burdwan exhibition. The statement which follows exhibits the present condition of this industry as carried on after the native method in the districts of these provinces:—

Statement showing the districts in which paper is manufactured out of jute and other materials, quantity of materials used, the cost of preparation, quantity prepared, and selling price.

Districts.	Materials used.	Quantity used during a year.	Cost of preparation.	Produce of paper during a year.	Selling price.	REMARKS.
Bansoorah ..	Waste paper, old gunny, and rags ..	.....	Rs. 1 per ream ..	12,000 quires ..	10 quires per rupee ..	In jail.
Bhooghly, Sally ..	Old paper, gunnies, jute or hemp ropes, rags, and junk ropes ..	1,300 mannds ..	Rs. 49 per 18 reams ..	86,400 " ..	18 reams per Rs. 76-8 ..	On European method.
Howrah ..	Hemp, old gunny cloth, paper and linen ..	.....	" 3-8 per ream ..	.....	1 ream per Rs. 4-8 ..	.....
Jessore ..	Old paper ..	.....	.....	7,253 quires ..	3 pice per quire ..	.....
Morshedabad ..	Rotten gunnies, cotton, old paper and gunn ..	.....	6 to 9 pice per quire ..	.....	Annas 1-6 ..	.....
Dinapore ..	Bornumukhi pat ..	.....	.....	.....	.....	Manufacture ceased.
Maldah ..	Jute, old paper, and rags ..	.....	Rs. 2-4 per 33 quires ..	.....	2 annas a quire ..	Formerly bamboo paper was made here.
Rajshahye ..	Old paper, jute, and rags ..	1,050 upwards jute ..	12 annas per ream ..	18,000 reams ..	.....	Diminishing gradually.
Purna ..	Jute, lime, and a little oil ..	.....	.....	.....	.....	Manufacture ceased.
Rangpore ..	Jute (now), sunn (was used before) ..	.....	Rs. 7-5 per 4 reams ..	.....	.....	.....
Bogra ..	Jute only ..	100 mannds ..	2 to 22 pice per quire ..	32,000 quires ..	3 to 4 pice per quire ..	Very durable; bamboo was formerly used here.
Darjeeling ..	Jute called danay and dasay ..	.....	.....	.....	2 reams at Rs. 5. ..	.....
Jalpioree ..	Red jute only ..	.....	Rs. 3-8 per 2 reams ..	.....	.....	1 mannd yields 300 quires.
Dacca ..	Mesta pat, hemp, with lime ..	.....	.....	.....	.....	.....
Mymensing ..	Mesta, old paper, with lime ..	.....	.....	.....	.....	Extensively done formerly.
Furreehpore ..	Jute and old paper ..	.....	.....	.....	.....	Small scale.
Backergunge ..	Jute and hemp ..	12 mannds ..	Rs. 2-8 per ream ..	1,300 quires ..	Rs. 6-4 per ream ..	.....
Chittagong ..	Gunny, old papers, patia and sunn ..	300 to 400 mannds ..	Rs. 2-1-3 per ream ..	25,000 quires ..	.....	.....
Northally ..	Mesta or Meechut pat ..	8 mannds and 17 seers ..	" 2-4-6 ..	1,897 " ..	Rs. 6-4 per ream ..	Jail.
Purneah ..	Jute and sunn ..	130 mannds ..	.....	10,000 " ..	.....	.....
Bhadrupore ..	Waste paper, old gunnies, jute, and rags ..	.....	.....	4,000 quires ..	.....	.....
Gya ..	Jute (in former times), hemp canvas (now) ..	88 mannds ..	.....	.....	.....	.....
Tirhoot ..	Old gunnies ..	700 " ..	.....	50,000 " ..	.....	.....
Shahad ..	Old rags and jute ..	.....	25 reams at Rs. 113 ..	1,298 reams ..	.....	One seer gives six quires, i.e., 4 annas gives 8 annas.
Cuttack ..	Hemp ..	.....	.....	.....	.....	.....
Pooree ..	Lately stopped in jail, where only it was done ..	.....	.....	.....	.....	.....
Balacore ..	Waste paper, rags, and hemp ..	30 mannds ..	Rs. 1-4 per quire ..	4,000 quires ..	Rs. 1-7 per quire ..	In jail, besides done by Kageen.

Full information as regards the manufacture of paper in the jails has not come to my hands; I believe it is carried on more or less in the native method, and with the same materials as are used by the natives.

The only large establishment in these provinces where paper is made after the European method and with European machinery is at Bally, close to the town of Howrah. Formerly there was a large mill at Serampore, which turned out printing and cartridge paper in enormous quantities, but it has now for some years been abolished.

257. As regards the different fibres named in the Government circular as available in the country and fit for paper-making,

Fibres named by Government.

I beg to submit the following brief notes, in the order in which they are entered in the circular. They have been compiled principally from local reports received in reply to a circular issued by me on the subject (Appendix O, pp. lxxxvii to xc), as also from Drury's *Useful Plants of India*, Royle's *Fibrous Plants*, Roxburgh's *Flora Indica*, Voigt's *Hortus Suburbanus Culcuttensis*, and other leading works on the vegetable productions of India, with a view to bring all the available information on the subject to a focus.

258. The cultivation of this plant and its uses have been described in a preceding paragraph (14). From the local

Abolmoschus esculentus.

reports I find that it may be largely grown in Jessore, Rungpore, and Bogra; it is extensively grown already in Hooghly, the 24-Pergunnahs, Nuddea, Moorshedabad, and Cuttack; and that it is already grown, and its culture may be extended in the following districts:—Bancoorah, Beerbhoom, Howrah, Dinagepore, Malda, Rajshahye, Mymensing, Chittagong, Noakhally, Tipperah, Patna, Gya, Shahabad, Tirkoot, Sarun, Chumparun, Bhaugulpore, Purneah, Balasore, Hazareebaugh, Lohardugga, Singbhoom, Maunbhoom, and Nowgong.

259. The stem of this plant yields a strong fibre fit for the manufacture of ropes. "The fibre in the Bancoorah district, where

Alutylon Indicum.

the plant grows wild, is sometimes used as a substitute for ropes in making fences for gardens, but not for any other purpose."

260. This plant has been described in paragraphs 12 and 13, and an account of the paper made at Dacca with its fibre occurs in paragraph 252 (*ante*, p. 87). In the state-

Hibiscus cannabinus.

ment annexed to paragraph 256, it will be seen that its fibre is used for paper-making also in Mymensing and Noakhali. In fact, as a variety of jute, it is as fit for paper-making as the true jute is.

261. When cut in flower, the bark of this plant yields a fibre which

Hibiscus subdriffa.

is rather fine and silky. The towy part of the fibre is considered suitable for the manufacture of paper, and for this reason the plant might be cultivated with advantage.

262. Indigenous on the western coast of Africa. The tree has long been

Adansonia digitata.

naturalised in India; but the only two districts in Bengal in which these trees are, according to local reports, to be found, are Hazareebaugh, where they are scarce, and Nowgong, where they are growing wild. Under instructions issued by the Secretary of State for India, at the instance of Dr. Hooker, the Government of India have directed the experimental cultivation of the tree in some suitable locality in Bengal; and arrangements are in progress for carrying out the wishes of the Home Government. Some trees in the Government Botanical Garden at Sibpur have attained a large size.

263. This plant is known all over Bengal under the name of *antmorā*.

Isora coryfolia.

It is particularly abundant along the foot of the Himalaya. It attains the size of a small tree, and bears flowers in the rainy and cold seasons. Its fruit, which comes to maturity in February and March, is used medicinally for infantile diarrhoea and in the lying-in-chamber.

264. A full account of the first-named plant is given in paragraphs

Crotalaria juncea,
ditto tenuifolia.

23 to 28 of this report. The second affords the Jubbulpore hemp. It is not grown in Bengal. Dr. Voigt takes it to be the same with the *C. juncea*.

265. The silky floss which surrounds the seeds of this plant is said to have been woven into shawls and handkerchiefs.

Calotropis gigantea.

Paper has been made of this floss by itself, as also with it mixed with two-fifths of the pulp of the hemp. The fibre of its bark is considered to be better adapted for cloth than cordage; and if cautiously removed from the stalks, might be produced of length enough for any purpose. From its elasticity and softness it may readily amalgamate with silk. A description of the plant occurs in paragraph 17 (*ante*, p. 4).

266. An under-shrub or twining plant, wild in Bengal, and the Himalaya, as also in Peninsular India. Its stem yields a fibre

Duemia extensa.

which has been recommended as a fair substitute for flax. It is said to be very fine and strong. An Alpine plant of the mezerum tribe, common in the Himalaya, from Darjeeling to Nepaul.

267. An under-shrub or twining plant like the last. It bears a small greenish yellow flower in April, and its fruit does not attain maturity until the following February.

Marsdenia tenacissima.

According to Voigt "the milk exuding from wounds in this shrub thickens into an elastic substance acting like caoutchouc on black-lead mark. The bark of the young luxuriant shoots yields a large portion of beautiful fine silky fibres, with which the mountaineers of Rajmehal make their bow-strings; on account of their great strength and durability." It grows wild in the sub-Alpine regions of Bengal.

268. An excellent paper is made from the inner bark of this plant, prepared like hemp. The plant grows on the most

Daphne cannabina.

elevated and exposed parts of the mountains, even where they are covered with snow. It seems to thrive luxuriantly wherever it is in the vicinity of the oak. A smooth soft and tough paper is made of its fibre on the hills in large sheets, measuring 12 x 4 feet. The fibre is also wrought into very strong cordage, which when worn out can be converted into an excellent quality of paper.

269. The history of this plant and its uses will be found noticed in paragraphs 29 to 37 (*ante*, pp. 8-10). It has not been

Cannabis sativa.

used as a material for paper-making in Bengal.

270. Dr. Roxburgh describes this as a "very ferocious-looking plant, the least touch of which produces a most acute, though

Girardinia heterophylla.

quickly-subsiding, pain; bark abounding in fine white, glossy, silk-like strong fibres." It is a native of Coocan, Coromandel, Promé, Zoongdung, Nepaul, &c. Cultivated to a small extent in Assam; not known on the plains.

Bahmeria nivea, *Urtica tenacissima*.

271. A full account of the rhea plant has been given in paragraphs 18 to 21 of this Report (*ante*, pp. 4-5).

272. This plant (mentioned in paragraph 22 (*ante*, pp. 6) is said to

Sesbania aculeata.

spring up in rice-fields and other wet places during the rainy season. The soil intended for this plant should be low and wet; it may be sown without much preparation, as the plant is hardy and rapid in growth, growing from 6 to 10 feet. The cultivation is considered advantageous, as the crop improves the soil.

Full directions for its culture are given in Royle, who states that a gentleman well acquainted with this fibre in India was at a loss to know "why the *dhonche* remained so much neglected in this country, as it is really a very excellent fibre for common cord and twine purposes, and certainly very much superior in strength and durability to jute; it is also a much harder plant than jute."

Antearis sacoidora.

273. This plant is closely allied to the hemp, but is not known in Bengal.

274. The economic uses of the fibre of the cocoanut are so well known

Cocos nucifera.

that nothing need be said here. The tree does not thrive well beyond the influence of the sea breeze,

and the bulk of the coir used in the country has to be imported from the Malabar Coast, the Maldives Island and Ceylon. The fibre of the leaf-stalk, which is said to be fit for paper-making, has not been employed to any purpose here, nor can it be had in sufficient quantities for exportation at a cheap rate. Like other fibres, the fibre of the cocoanut may be made use of in the manufacture of paper.

275. The toddy palm is common all over India, and strong and durable fibres are drawn from the petioles of the frond of this tree; but they have not been employed to any extent for economic purposes in Bengal. The trees are generally scattered so widely apart, that it would be difficult to collect their fibres in sufficient quantities for exportation at a cheap rate.

276. Fibres of different qualities may be obtained from the leaf-stalks, stems, spathes and seed-coverings of this plant, but very little of them is prepared for use. In Bogra the betel-nut is said to be steeped in water with its husks on, and when the latter is decomposed the fibre is taken out; but it is not stated for what purpose the fibre is used. The tree grows very vigorously in most of the littoral and eastern districts of the Lower Provinces.

277. This plant grows wild in marshy places; in the Sunderbuns it is particularly abundant, growing on the two sides of the creeks, which are often made impassable by the thorns, interlacing branches and aerial roots of this plant. It yields a very fragrant white flower in spathes 16 to 20 inches long, with which an aromatic water is distilled for use as a cordial. The flowers are also used in the preparation of a kind of scented catechu much esteemed by Hindu ladies. The leaves, spathes and aerial roots are rich in good, strong fibre, and they are said to be utilized in the districts of Hooghly and Bogra. This is exceptional; ordinarily no attempt is made to manufacture any fibre from the *Pandanus* in Bengal.

In Mauritius however, the tough fibres of its leaves are used for matting, cordage and thatch, and it is said they are good for paper-making also. It there "grows to the height of thirty feet; but generally the cropping of the leaves, which commences in the third year, keeps the plant down to the height of from six to ten feet. It is remarkable for the aerial leafless roots which it sends down as supports for its stem, and which are of so fibrous a nature as to be employed for making paint brushes for common purposes. The leaves are cut every second year after the plant is three years old, and each plant is said to yield material enough for two bags. The preparation must begin immediately the leaves are cut down from the trees, and consists first in splitting the leaves into fillets, which are from three-fourths to one inch broad at the base and tapering to a point to about from three to four feet in length."—*Royle's Fibrous Plants of India*, pp. 36-37.

278. This plant, described in paragraph 16 (*ante*, p. 4) is well known for the excellent fibre it yields. "It is easily propagated by cuttings, and thrives in almost any soil, throwing up abundance of fresh roots, shoots, and thus extending itself in every direction." "The easy propagation of the plant, its general distribution over the country, the simple process of preparing the fibre, and the variety of uses to which it can be applied, whether for rope, paper, cloth, or other purposes, make it extremely valuable."

The native method of preparing the fibre is to steep the leaves, which are 12 to 16 inches long, in water for several days, till the pulpy part has rotted. In this way the fibres are easily separated, though they are apt to be discoloured by the steeping. Sometimes the leaves are first beaten to separate the fibres more easily, and then placed on a board and scraped with a piece of rough stick or iron till the pulp is removed. For every 40lb of fresh leaves Dr. Roxburgh obtained about 1lb of the clean fibre, and he reckoned that two crops might be easily calculated upon when they are planted for the sake of their fibres.

279. This is a liliaceous plant, like the last, and is deservedly estimated as a magnificent ornament for gardens. It grows freely in almost any climate, and abounds in fibre of a fine quality and strength. It is reported to be growing wild in Burdwan, Howrah, Jessore, and Rajshahye; it is cultivated in Bogra, Cooch Behar, Backergunge, Mymensing, Sylhet, Cuttack, Pooree, and Hazareebaugh; and it is to be found, though not abundantly, in Moorshedabad, Pubna, Bhaugulpore, and Lohardugga.

In the Rajshahye district, it is said that the fibre of this plant can be prepared at Rs. 4-8 or Rs. 5-0 per maund, selling at Rs. 6. But I do not find that it is anywhere cultivated in Bengal for its fibre.

280. The fibre of the plantain tree is considered an excellent substitute for hemp. The outer leaves of the sheathing foot-stalks yield the thickest and strongest fibres. Dr.

Hunter observes that the fibre is easily cleaned, but some simple machinery is requisite. [Selections from the Records of the Madras Government No. XXIII, p. 158.] The fibre is fine, white, silky, and of considerable length, lighter than hemp, flax, and aloe fibre, but very strong.

"Among cultivated plants," writes Professor Royle, "there is probably nothing so well calculated to yield a large supply of material fit for making paper of almost every quality as the plantain (*Musa parvatisaica*), so extensively cultivated in all tropical countries on account of its fruits, and of which the fibre-yielding stems are applied to no useful purpose. * * * Each root-stock throws up from six to eight stems, each of which must be yearly cut down and will yield from three to four pounds of fibre fit for textile fabrics, for rope-making, or for the manufacture of paper. As the fruit already pays the expenses of the culture, thus the fibre could be afforded at a cheap rate. As from the nature of the plant, consisting almost only of water and fibre, the latter might easily be separated * * * some very useful and tough kinds of paper have been made in India from the fibres of the plantain, and some of finer quality from the same material both in France and in this country."—*Fibrous Plants of India*, p. 390.

The plantain tree is so generally to be found in Bengal, that it is scarcely necessary to specify the districts in which it is cultivated, being indigenous in most districts and congenial to the soil of nearly all districts. The tree thrives best on land covered with a new layer of mould dug out of tanks containing much decayed vegetation. The cost of cultivation and outturn are thus described, as observed in a suburban district:—

"For instance," writes the Collector of Howrah, "it costs quite Rs. 70 to start a plantain garden of 250 plants to a beegah of land. To keep it up during the two years it is idle will bring the outlay to near upon Rs. 100. In the third year sum of Rs. 75 is recovered, of which about Rs. 60 are net. It is not till the fourth year that the cultivator turns the corner, supposing that he has not borrowed his outlay at heavy interest, which however he usually has done."

Professor Key of Madras very correctly states that in India the plantain will flourish in the forest soil, and near brackish water, and that its culture might be extended with very little trouble and expense. A sucker being planted rapidly attains maturity, some varieties in eight months, others within the year, * * * each throwing out from its roots and around its stems from six and seven to eight and ten fresh suckers; these will each form a distinct plant, * * * all requiring to be cut down annually in order to make room for the fresh suckers which spring up. * * * By cutting away some of the suckers as they arise at different periods and allowing others to remain, a supply of fruit and also of stems for fibre may be obtained for a great part of the year."

Full details of the process of preparing the plantain fibre are given in Royle's *Fibrous Plants of India* (pp. 78-90), where he says: "Of the value of the plantain fibre for paper-making, there can, I conceive, be no doubt. Some paper, though unbleached but excellent, as far as substance and tenacity is concerned, was sent from India by Dr. Hunter in 1851. In the year 1846,

Mr. May showed the author some beautiful specimens of note and letter paper made from plantain fibre."

281. This is a Philippine plantain, and not to be met with in Bengal.

Musa textilis.

At the Royal Botanical Garden at Sibpur it has been cultivated for some years; but it seems not to take kindly to the place, as it has not yet flowered there.

282. This plant has already been noticed in para. 15 (*ante*, p. 3). Though

Agave americana.

it is rich in fibre, and is common in almost every part of Bengal, it has rarely been utilized for the manufacture of its fibre. According to Royle and Drury, in the Madras presidency the fibre is much used and prepared at a very small expense. The process of preparation is as follows:—"The leaves are cut and thrown into water for three or more days, after which they are taken out, macerated, and scraped with a rather blunt instrument: It was found that the leaf fibres were loth to rot owing to a milky, viscid juice which they contained. This defect has, however, been considerably obviated by very hard crushing or pressure between heavy cylinders, which, by expelling the moisture, renders the fibres more pliable for weaving and other purposes." The cultivation of the plant can be extended to any extent desirable, and at a very small cost.

283. This plant, though not indigenous, has long been domesticated in

Bromelia amans or *Amans sativa.*

India. It is to be found in almost every district of the lower provinces, where it is cultivated for its fruit. Except in the Rungpore district, where the leaves are steeped in water for four or five days, and when decomposed the fibres are separated and converted into twine much used by the local shoe-makers, the fibre of the pineapple is not prepared in Bengal; but if its fibre were more generally known to be valuable for manufacture, it would without doubt be more extensively raised.

Corchorus capsularis.
C. olitorius.

284. Nothing need be said of these plants in addition to what has been already stated above (paras. 41 to 64.)

285. The leaves are twisted into ropes of great strength. The plant

Saccharum munja.

grows abundantly in almost every part of Upper India, and has been from a very remote period of antiquity used by the Hindus for making cords. It is a common weed in most parts of Bengal also. Its fibre can be exported at a small cost, and to any extent desirable.

286. This is a rank weed like the last. Its leaves are made into ropes,

Saccharum sora.

which are very strong and durable, even when exposed to the action of water. Like the *Saccharum munja*, this reed is also considered by Dr. Royle to be suitable for paper-making.

287. The early history of this plant is given in paragraphs 38 to 40 of this

Linum usitatissimum.

report (*ante*, pp. 10, 11, 12). In 1840 the Agri-Horticultural Society of India published in their Transactions some interesting papers, containing reports of the result of experiments with Dutch and Russian seed in juxtaposition with the country seed. These reports showed that where a proper selection of lands had been made and the cultivation had been properly conducted, both European and country seeds came forward with all the luxuriance that characterises the crops in Europe, and in length and fineness the fibre raised by the Flax Company was pronounced by the Belgian workmen as equal to the produce of Europe.

This plant being raised for its seed only, the stalks are allowed to be trampled down or eaten by cattle. The fibre will of course be of inferior quality, but still applicable to many purposes. "To show the usefulness of this refuse of the fields, a few bundles of stalk, steeped in water in a common earthen-ware pan and exposed to the full action of a powerful sun, will yield in a few days a fibre easily separated by the hand; when dried in the open air, and made into the common twine is found to be decidedly superior, in smoothness and regularity, to what is wrought out of the *Hibiscus cannabinus*."—*Journal of Agri-Horticultural Society of India*, Vol. VIII, p. 180.

It is reported to be scarcely grown in Hooghly, Pubna, and Lohardugga, and to be more extensively cultivated in Burdwan, Beerbhoom, Moorshedabad, Dinagepore, Rajshahye, Furreedpore, Mymensing, Noacolly, Tipperah, Bhaugulpore, Cuttack, Balasore, in the districts of the Presidency and Patna divisions, and also in the districts of the Chota Nagpore division, except Lohardugga.

288. The rice straw is a valuable fodder, bamboos are used for a variety of domestic purposes, and the refuse of the sugarcane is used as fuel for boiling molasses, and they are not likely to be had sufficiently cheap for exportation as a material for paper-making. In the Maldah district, according to Pemberton's Statistical and Geographical Report, paper used formerly to be made out of bamboos by turning certain parts of the stalk into pulp, steeping the pulp in a solution of alum and water, and after agitating the mass, taking up on a fine sieve a quantity of the floating particles sufficient to form a sheet. The paper thus made was strong and durable, but the bamboo is no longer used for paper manufacture in Maldah.

289. I annex here a tabular statement showing the extent to which the different plants named in the Government circular and described above are available in the different districts under the Lieutenant-Governorship of Bengal :—

Rice-straw, bamboo, and sugarcane refuse.

*Statement showing the Districts in which the Fibrous Plants enumerated in the letter of the
Agricultural Department of the Government of India, No. $\frac{1}{129}$, dated 26th June 1873, grow
or are cultivated.*

tural Department of the Government of India, No. 149, dated 26th June 1873, grow or are cultivated.

C, Largely cultivated; D, Scarce.

[illegible]

290. Some of the plants named above are cultivated for economic purposes, and the names of the districts where they are grown, the cost of cultivation and preparation per beegah, the yield per beegah, the selling price of produce per maund, and the cost of transport of produce to Calcutta, are shown in the following table:—

Names of districts and fibrous plants.	Cost of cultivation per beegah.	Cost of preparation per maund.	Yield per beegah.	Selling price of produce per maund.	Cost of transport to Calcutta.	
Burdwan—						
(1) Sunn	As jute	As jute	As jute	Rs. 5 per maund.		Seed.
(2) Flax	Rs. 1-0		3 maunds	" 5		
Bancoorah—						
Mesta	Rs. 1-0		3 to 6 maunds	Rs. 2	8 to 12 annas per maund.	
Jute	" 7-4		3 " 6	" 2-4		
Sunn	" 1-2		2 " 5½	" 2-8		
Hooghly					1 pie per maund per mile.	
Howrah—						
Jute	Rs. 4-4	Rs. 1-10	3 maunds	Rs. 2-8		
Luckhipori jute			18 to 24 maunds			
Hemp	Rs. 5-0	Rs. 2-8	3½ maunds	" 6		
Coconut	Rent only Rs. 10	" 1-8	8½ "	" 4		
Plantain	For 2 years Rs. 100		250 trees	" 75		In 3rd year
Dhenro				" 2		
Pine-apple	Rs. 14 for 2 years			" 0		
Hotel	" 50			" 100 per beegah		
Dhenros				" 1 per plant		
Nuddie—						
Flax	Rs. 1-8		26 seers	Rs. 4 to 5 per md.	Rs. 4 per maund per cart.	
Jessore—						
Country produce					Rs. 15 to 20 per 100 maunds.	
24-PREGUNNAHS.						
Dum-Dum—						
Dhenros	Rs. 8		Rs. 16 to 20		1½ annas per md.	
Pat	" 9		" 14		"	
Sunn	" 10		" 20		"	
Narikel	1 anna per tree per ann.		" 1 per tree per annum.		"	
Tal	8 pie		8 annas ditto		"	
Betelnut	" 3		" 2		"	
Plantain			4-50 per beegah		"	
Pine-apple	Rs. 10 annually per beegah.		" 50		"	
Rice straw	" 9 ditto		" 13		"	
Bamboo	" 10-4 ditto		" 16		"	
Sugarcane	" 24 ditto		" 40		"	
Moorshedabad—						
Hemp	Rs. 4		Maunds 3		As. 3-9 per md. by rail, & Rs. 20 per 100 mds. by boat.	
Flax	" 4		" 4 to 5			
Sugarcane	" 16		" 4 to 5			
Bamboo	" 5		" 2-8 to 2-10	Rs. 6 to 12 per 100	Rs. 20 per 1,000 mds. in raft.	
Sunn	" 3		" 5 to 6	" 4 to 5 per md.		
Dhenros	" 2 to 3		" 5 to 6			
Plantain	" 4		" 6-10			
Maldah—						
Produce					Rs. 40 to 50 per 100 maunds, plus cost of carriage to Rajmahal station.	
Bogra—						
Mesta	Rs. 3 to 3-10		Maunds 2 to 3	Rs. 2-8 to 3		
Sunn	" 3 to 5-5		" 1-25 to 2-13			
Akond	" 1		" 25 to 33			
Hemp	" 13 to 15		" 60 to 66			
Coconut	" 60 to 66		" 26 to 33			
Tal	" 10 to 13		" 60 to 66			
Betelnut	" 41 to 50		" 6 to 8-13			
Kora	" 3-5 to 4		" 3 to 5			
Mutta	" 8-5 to 10		" 6-26 to 8-13			
Lanthana	" 8-3 to 10		" 13-13 to 16-26			
Plantain	" 10 to 13-5		" 10 to 13-13			
Pine-apple	" 5 to 8					
Shor	" 2-10 to 3-5					
Flax	" 3 to 4					
Rice	" 6 to 6-10					
Bamboo	" 10 to 13-5					
Sugarcane	" 16-10 to 20					
Goalparah—					Rs. 1 per maund	
Mymensing—						
Sunn	Rs. 4-10	Rs. 6-14	Maunds 3-13 to 3-26	Rs. 10 per maund	12 annas per maund.	
Tipperah—						
Produce					Rs. 12 per 100 mds. by country boats.	

Names of districts and Abrous plants.	Cost of cultivation per beegah.	Cost of prepara- tion per maund.	Yield per beegah.	Selling price of produce per maund.	Cost of trans- port to Calcutta.
Tirhoot—					
Bhanros	Rs. 12	...	Fruit 15 mda. 15 Ras & fibre 5 mda. 4 maunds.	Rs. 4 per maund.	
Pas	" 11-12	...	8 "		
Sunn.	" 9-8	...	8 "		
Akond	" 7-8	...	8 "		
Hemp	" 14	...	15 " 60 "	Rs. 1 per maund.	
Tal	" 8	...	Scent Rs. 50 maunds of fibre.		
Koora	" 8	...	8 maunds of fibre		
Kola	" 8	...	2 "		
Pine-apple	" 12-8	...	2 " 22 "		
Munja	" 6-8	...	2 " 22 "		

291. The district officers consulted name the following plants, not in

Fibrous plants not named in Government circular.

Fibrous plants not named in Government circular.

have added the botanical names of such of the plants as I have been able to identify, but several of them appear not to be known to science.

I. *Sthala padma* (*Hibiscus mutabilis*).—See paragraph 10, page 2.

II. *Bon-hârul* (*Hibiscus strictus*).—See paragraph 11, page 3.

III. *Suryamani* (*Hibiscus hortus*).—Flower middle sized, scarlet. Ver. common.

IV. *Dhoncha* (*Sesbanea aculeata*).—See paragraph 22, page 6.

V. *Khiri* (*Mimusops Kauri*).—This is a large tree, common in most part of Bengal. Its flowers are middle-sized, yellowish white, faintly tinged with rose. An unctuous fluid exudes from this tree.

VI. *Anantamul* (*Hemidismus indicus*).—Common all over lower Bengal.—This is a shrubby, delicate-looking but thorny plant, with flower 2½rd line, on the outside pale green, on the inside dark blood-colored. Its roots are extensively used as a substitute for sarsaparilla. “The natives employ them particularly for the thrush in children, giving about a drachm every morning and evening of the powder fried in butter.”

VII. *Phul Kasturi* (*Hibiscus abelmoschus*).—Common all over lower Bengal. —“A plant so named from the Arabic *hub-ool-mooshk*, in Hindoe *Mooshkdana*, or musk seed. The seeds have been so named on account of their odour. The plants abound in mucilage, and are much employed in the north-west of India in clarifying sugar.”

VIII. *Huñmanto*.—Howrah.—“A hollow-stalked water-plant, grows only in the south of the district. Its leaves are palmated and divided into five broad points. It closely resembles the *Calatropis gigantea*, and has a flower very similar (in general appearance) to that of the *Hibiscus cannabinus*. Its fibre is very white, but poor and short. It is used for making the rope with which the natives tie together their wattle fences.”

IX. *Noná* (*Anona reticulata*).—A middle-sized tree; flower largish, yellowish green, of a vinous smell, producing large heart-shaped fruits, whence its common English name, “bullock’s heart.” The substance of the fruit is very like that of the custard-apple, to which this tree is closely allied. Common all over Bengal.

X. *Atá* (*Anona squamosa*).—The well known custard-apple of Bengal; common all over Northern India.

XI. *Jhāpi Tepari; Kāt sholā*.—The Collector of Furreedpore says.—“The names given are those by which they are known in this district; but whether or not fibre can be extracted from them for any useful purpose can only be ascertained by actual experiments; the people of the country never do so. These plants are, however, not cultivated; they grow wild in the villages, and are not obtainable in any quantity.”

XII. *Golancha* (*Menispermum glabrum* or *cordifolium*).—A climbing, shrubby weed common all over the country, growing in drains, on old rubbish mounds and wild places. Its stalks are rich in farina, which is largely extracted for medicinal purposes.

XIII. *Murgá*, alias *Muragjatá* (*Celosia cristata*).—An ornamental garden plant, common all over Bengal and Northern India generally. The Collector of Hooghly says—"This plant yields excellent fibre, very strong and flexible. Rope made of it sells at Rs. 25 per maund, while jute rope fetches only Rs. 5 or Rs. 6. It grows abundantly in the Burdwan districts, but it is not much cultivated in Hooghly. There are two kinds of *Celosia cristata*, with red and yellow flowers respectively; but only the red variety appears to be known in this district. The plants grow to the height of about six feet, and has large flowers with a velvety appearance. The red variety is sometimes called *Lal Murga*, and the other *Huldi Murga*."

XIV. *Bábui*, *Bábui tulsi*, *Bábui ghás* (*Ocimum pilosum*).—A species of basil common all over Northern India. In Bengal it is grown almost everywhere for its seeds, which become emulscent when steeped in water, and are largely used by Muhammadans in cooling drinks or sherbets. According to the Collector of Hooghly—"it is cultivated to a small extent in the western portion of the district on account of the strong fibre it yields for rope making. The rope made, however, is only fit for use in the dry season; in the rains it rots quickly. The plant is fragrant and aromatic; it flowers nearly all the year round, the flowers being white. The stem is much branched and is ascendant; leaves small, oblong; quite entire petioles and verticils very hairy; racemes elongated; corolla usually glabrous, small and white. It is also used by the natives for medicinal purposes." I have not heard of this plant being anywhere else cultivated for its fibre.

XV. *Khákrá* (*Saccharum spontaneum*).—Wild and common all over Bengal, in marshy places. It is a perennial plant, and its stems are used for making mats, thatching houses, and other economic purposes. Buffaloes are fed on this reed. It can be procured to any extent.

XVI. *Ulu grass* (*Abroma augusta*).—This grass grows wild in almost every part of Bengal and Northern India. It is prized highly for thatching, as its leaves do not rot near so quickly as paddy straw does. Paper has been made of it at the Bally Paper Mill, which appears to be as strong as paper made of jute.

XVII. *Jawár*, *makká*, *bluttá*, (*Zea mays*).—Maize, or Indian corn, common all over India, cultivated for the corn, the stems being used for fodder. The seed coverings are said to be rich in fibre, fit for paper-making.

XVIII. *Kúsha* (*Poa cynosuroides*).—A wild grass common all over India, used extensively in religious ceremonies, and in the manufacture of coarse mats for religious purposes. Its stems are much stronger than paddy straw, and grow to a height of 5 to 6 feet.

XIX. *Kokalota*.—Jessore.—"Yields a strong fibre."

XX. *Ratan*, cane palm (*Calamus rhotang*).—Jessore.—"The bark of the ratan, which grows so extensively in the Jessore marshes, may also be utilised for the purpose of manufacturing paper and ropes."

XXI. *Suchphor*.—Moorshedabad.

XXII. *Kodul tree*.—Cuttack.

XXIII. *Udal tree* (*Sterculia villasa*).—Assam, where "it grows wild and is sold at Rs. 2 per maund." Hazareebaugh.—"This is a tree, and it grows to a height of about 15 or 18 feet, and is nearly 5 or 6 inches in diameter." It also grows in Cuttack.

XXIV. *Seeli nuta*.—Cuttack.

XXV. *Soan moi*.—Cuttack.

XXVI. *Kallia moi*.—Cuttack.

XXVII. *Ponassi Grass*.—Cuttack.

XXVIII. *Pata* (*Sida lanceolata*).—Grows wild all over Bengal; root intensely bitter and stomachic according to Dr. Ainslie.

XXIX. *Lol* and *Suffaid Buriala* (*Sida rhomboida* and *Sida rhombigola*).—"The *Lol* and *Suffaid Buriala* are well known in their natural state; they are short and bushy. The *Sida lanceolata* (*Pata*) also grows wild, but the roots are used largely by natives as a medicine. It has a bitter taste, and is useful as a tonic."

XXX. *Kiffiee*.—“Lepcha ‘Kiffie,’ the name of the plant, ‘Kee’ the fibre, or Zugay, Bhootea name.”—Darjeeling. “A small tree, about 15 feet high and about 6 inches in diameter when of mature growth. The bark is not taken from the main stem. The branches, when about a year old, having attained a length of about 5 or 6 feet, are lopped off; the bark from them is peeled off and scraped on both sides with a knife, the centre is thus left clean and white; it is then dragged into long fine shreds, like thread, and dried in the sun. When dry it is twisted into string. The Lepchas and Bhooteas prize it greatly for making fishing-nets and bow-strings. It is not cultivated, but grows wild at elevations from 4,000 to 5,000 feet. It cannot be obtained in any great quantity.”

XXXI. *Kullihume, Lepcha; or Kulhim, Bhootea*.—Darjeeling. “This grows to a tree of considerable dimensions, but the bark is taken only from young saplings about 4 or 5 inches in diameter and about 12 or 15 feet in height. The bark is loosened from the young tree, and while it is being dragged off the tree is battered with the back of a hill-man’s knife right down the length of the stem, so as to keep loosening it and prevent its breaking off short. When long strips of bark have been thus obtained, it is steeped in water; and when soft, the outer or harder part of the bark is pulled off with a knife, and the softer or inner portion dried in the sun. When dry it is twisted into a stout cord or rope, which is very strong, and is used for tethering cattle. The plant is found in the valleys, about 3,000 feet above sea-level.”

XXXII. *Keying, Lepcha; Pooah, Nepalese*.—Darjeeling. “This plant is best known by its Nepalese name, Pooah. It is a small shrub, attaining a height of from 4 to 6 feet, the stem of which is from half to three-quarters of an inch in thickness. It is found at elevations ranging from 3,000 to 4,000 feet. The plant grows wild, and is not very abundant; it is not cultivated, but no doubt could easily be propagated. The bark is peeled off in long strips and boiled in water mixed with ashes. When considered soft enough, the vessel is taken off the fire, and the contents allowed to remain steeping in the water and ashes for two or three days or more. It is then well washed in water until the woody and vegetable matters are removed, and the fine fibre alone remains. This is a very strong fibre. The natives use it for making fishing-nets and for bow-strings; it is prized next to the Kiffie.”

“When carefully prepared, the finest silky fibre can be produced from this plant, from which it is said a fabric can be manufactured as fine or finer than the China grasscloth. The value of this (and indeed of all the fibres) is much deteriorated by the very crude and primitive method of obtaining it.”

XXXIII. *Cisnoo*.—Nepalese; *Cuzzu, Lepcha*.—Darjeeling. “This is a nettle, best known by its Nepalese name, *Cisnoo*. There are two or three varieties. The description most approved, indeed the only description the fibre of which is utilized, grows much taller than the others, and has a much larger leaf; it will grow to 10 or 12 feet in height. It grows wild at elevations from 4,000 to 7,000 feet, and is very abundant. The process adopted for obtaining the fibre is the same as that resorted to with the Pooah plant just described. A stout coarse cloth is manufactured from it by the hill people * * *. In the estimation of the natives of these hills, these fibre-yielding plants, if classed according to their worth, would range as follows:—1st Kiffie; 2nd Pooah; 3rd Cisnoo; 4th Kullihume.”

XXXIV. *Paper plant*.—*Da, Lepcha, Kahguttea, Nepalese*. Darjeeling.—The Deputy Commissioner of Darjeeling describes this plant as follows:—“This elegant shrub produces a very fragrant, small white flower; the leaves are of an elongated formation, smooth, and of a rather dark colour. The bark is whitish or greyish, and of an exceedingly tenacious texture. There are two descriptions of this plant, viz. *da-nah* and *da-say*; the former is found on the heights at an elevation of about 7,000 feet, and is most esteemed; the latter in the valleys, in a warmer temperature, and will not make good paper. The bark is stripped off, well dried, and then boiled in water and ashes. When soft it is well washed, then pounded on a stone. The coarser and hard portions are picked out, and the finer pulp spread over sieves made of fine cloth, stretched tight across wooden

frames; these sieves are put out in the sun, exposed to the wind to dry. When the pulp is dry, the process is finished, and the result is a coarse paper of a light brown colour, which is very durable." I have no means of ascertaining whether this is the same with the *Daphne* described in para. 268.

XXXV. *Epiripeun*.—Maunbhoom.—“*Epiripeun*, baruts, or balamra, grows throughout almost the whole of the district as a small under-shrub, consisting of two varieties, one the red and the other the pale variety; leaves alternate; lanceolate and serrated; flowers yellow, having bracts which remain adherent to the capsules; petals fine.”

XXXVI. *Koekoirbichi*.—Maunbhoom.—“Is a plant which grows in a wild state, herbaceous, rising to about 5 or 6 feet in height, leaves, alternate, lanceolate.”

XXXVII. *Amrool*, common in Bengal.—“Herbaceous rising to the height of about 6 feet. The fibre which this plant yields is not very strong.”

XXXVIII. *Shoetra Lata*.—Maunbhoom.—“A creeping plant, which grows chiefly on the hills. The leaves of the plant are kidney-shaped, large, thin, soft, with soft down-like substances. On the flat sides the veins, about 13 in number, all radiating from the end of the leaf-stalk; the plant is said to flower in the spring. The flowers are said to be white and red mixed, and resembling those of the cotton plant. The bark of this plant is taken out generally in the rainy season, and used for the preparation of ropes. This plant may also be utilized in the manufacture of paper.”

XXXIX. *Booch and Asta*.—Maunbhoom.—“From the membranous barks of these plants ropes are made, and which may be made serviceable in the manufacture of paper.”

XL. *Kounji*.—Hazareebaugh.—“This is a large tree found in the jungle.”

XLI. *Katmahuli*.—Hazareebaugh.—“This is a small tree; grows to a height of less than 20 feet.”

XLII. *Kumbhi*.—Hazareebaugh.—“This is a large tree found in the jungle.”

XLIII. *Dhamun*.—Hazareebaugh.—“This is a tree which grows to a height of 20 feet.”

XLIV. *Noye*.—Rungpore.

XLV. *Chow*.—Rungpore.—“From the bark of which the fishermen prepare fibres for their fishing baskets. These fibres grow round the top of the tree, and is very strong.”

XLVI. *Brass*.—Gya.—“There are two sorts of fibres extensively used here for binding thatches, &c., from which paper may probably be manufactured. These are the fibres called *prass* and *mohlan*. The former is prepared from the roots of a tree called *porass*. The *porass* and *mohlan* grow in jungles in the southern parts of the district. The price of *porass* is Rs. 2 per maund.”

XLVII. *Mohlan*.—Gya, Hazareebaugh, &c.—“The *mohulan* is a plant found easily in the forests. Its fibre is called *Chope*, which is used as string. This is a creeper like a vine. It stretches on the tree to a length of more than 200 feet. The fibre is peeled in the summer season. The fibre is peeled by the residents of the jungles and brought to market for sale. Price at less than Rs. 2 a maund.”

XLVIII. *Joon*.—Maunbhoom.

XLIX. *Boncapas*.—*Hibiscus vitigolius*, common all over India; a wild plant leaving large yellow flowers with a purple eye during the rainy and cold season. According to the Deputy Commissioner of Lohardugga “there are two plants of this name. Both are fibrous and very common. The fibre is said to be exceedingly white, fine, and strong. They flower in September and October, and the fibre is procured by steeping.”

L. *Lottoli*.—Maunbhoom.—“Annual, herbaceous; grows from 2 to 4 feet in a wild state; leaves abcordate, toothed, the two sides furnished with minute down-like substances; flowers small, yellow, sepals five, petals five, other parts too minute to be distinguished with the naked eye. Capsules, almost spherical, marked with spines all round. The stem has on it soft white hairs.”

LI. *Cheynch* or *Cheynchoo*.—Lohardugga.—“This plant, of which there are also two kinds, is said to possess an exceedingly strong and smooth fibre. One kind produces a long seed-pod, while the other produces a round one; the flowers

of both are small and yellow. The fibre of the round-podded one is said to be much the finest and best. Both these plants, I should say, are capable of cultivation. The fibre is produced by steeping, and the plants cut when half grown."

LII. *Chakwan*.—Lohardugga. "This plant is one of the commonest weeds in the district; it is found growing thickly everywhere. It is said to possess a very fair fibre."

LIII. *Kassaundun*.—Lohardugga. "This plant is said to be closely allied to the Chakwan. The fibre of the Kassaundun has to be steeped in order that the fibre may be detached."

LIV. *Chipari*.—Rajmehal. "A jungle creeper made into ropes by the Sonthals and sold in Rajmehal, Sahibgunge, and Bhaugulpore."

LV. *Sacssigosh*.—Assam. "The bark of Sassee occasionally used for writing is *sanchi pat* or bark of the sanchi tree. The Sanskrit *agar* or *agaru* is found in the hills, and is used as substitute for paper."

LVI. *Kukursuta*.—Assam.

LVII. *Fak Dima*.—Do.

LVIII. *Makori sopa*.—Do.

LIX. *Garokhia karoi*.—Do. (Two species).

LX. *Pamal*.—Do. (Creeping plant).

LXI. *Ghilalota*.—Do. (Creeping plant).

LXII. *Dhakimota*.—Do. (Creeping plant).

LXIII. *Bogilota*.—Do. (Creeping plant).

LXIV. *Tara*.—Do.

LXV. *Patidai*.—Do.

LXVI. *Rakta-simul*, *Simul* (*Bombax malabaricum*).—Common all over Bengal. "This large and stately tree grows in most parts of Southern India; it reaches a great size in the Bombay Presidency, where, both on the coast and inland, it is one of the most common trees, and there the planks are extensively used in making the light packing boxes used in the export of bulky goods from Bombay and other places; also for fishermen's floats when the *Adansonia* is not at hand."

"The red cotton tree is common throughout Southern India; it is abundant in the plains of British Burmah, where its light and loose-grained wood is used for coffins. A cubic foot weighs 28lb. When the trees grow large, the stem spreads out towards the base, at intervals, into buttress-like projections. In spring huge magnolia-shaped scarlet blossoms cover the trees, and in some places the young flower buds are cooked and eaten. The cotton is used for stuffing cushions and pillows. In a full-grown tree on good soil, the average length of the trunk to the first branch is 60 feet, and average girth measured at six feet from the ground is 15 feet. It yields the moochceras resin, and its roots constitute the safed moosli of the bazaars, which, powdered, forms a thick mucilage with cold water, and answers admirably as a nutritious demulcent for convalescent persons."

LXVII. *Hal*, *Loa*, *Gunda*, *Gila*, (*Bauhinia scandens*).—Assam. This trailing, climbing Bauhinia has small whitish flowers, which turn to a yellowish colour. It runs up over trees of the largest size. Its fibrous bark is made into cloth and rope, but the fibres are harsh and stubborn.

LXVIII. *Gulkandar* (*Stirculia vellosa*).—Assam. "A large tree of the Dekhan and in the mountainous countries to the eastward of Bengal, common in many places in the outer hills of the North-Western Himalaya to 3,600 feet or more, up to the Indus, and occurs in the Salt Range. It has a straight trunk with a smooth bark; leaves palmated, five or seven lobed. The bark can be stripped off from the bottom to the top of the tree with the greatest facility, and fine pliable ropes may be made from the inner layers, whilst the outer yield coarser ropes. The rope is very strong and very lasting, wet doing it little injury. In Southern India elephant ropes, and in Bombay bagging, are made of it. In Dehra Doon good paper has been made from it."

LXIX. *Jeebun* (*Sponisia orientales*).—Assam. "A small erect tree of Ceylon, the Coromandel Coast, common along the foot of the Ghats, and occurring in the Kennery forests, Salsette, in Nepal, Bengal, Sylhet, and Assam."

Roxburgh says it is neither useful nor ornamental. Voigt mentions that "the under-bark consists of numerous reticulated fibres, and forms a natural cloth used by the Garrow race, and that its leaves are used for polishing horns."

LXX. *Buriar*.—Lohardugga. "Shrub growing from two to five feet high, yields a very strong fibre, much appreciated on account of its toughness and durability, and chiefly used for cattle-tethers; cut immediately after flowering in September, and when half-grown, fibre detached by steeping."

LXXI. *Cotton*.—Too valuable to be used in its fresh state for paper.

292. The district officers, who have been consulted by the Commission, are unanimously of opinion that the production of fibres other than what are now already in the market, will not, and considering their want of capital, cannot, be earnestly taken up by the cultivating classes in these provinces, until the presence of a real and permanent demand for them is generally known and felt. Indeed it is almost on all hands admitted that much valuable fibre, which might with little trouble and less cost be made suitable to the manufacture of paper, and even of cloth, is now absolutely wasted in all parts of the country from want of due attention and encouragement, and unless some impulse is given to the people, either by the action of Government or by private enterprise, it is hopeless to expect that the boundless supply of valuable fibres which the fertile soil of the country is perennially yielding will ever be utilized by local industry.

Dr. Royle suggests the establishment, in the interior and at short distances, of depôts for the collection of fibres. If such a project could be carried out and fair prices are offered for different fibres of stated qualities, I have no reason to doubt that the agricultural classes would soon and readily be induced to engage largely in extending the cultivation of plants already grown for their fibres or for other use, in cultivating new plants which, being suitable to the soil, may yield fibre of higher value in the market, and in extracting fibre from those plants which are generally known to be growing spontaneously, but of which no use whatever is now made.

It seems to me that an impulse may also be given to this new branch of industry by attaching to the experimental farms, now in course of introduction into these provinces, a small establishment, which should at first be employed in drawing out fibres after the most approved methods from plants grown on the farms, or growing spontaneously in the vicinity of the farms. If the fibres thus produced should be found to be useful for manufacture and remunerative in their returns, the Government may perhaps, in the absence of private enterprise, well constitute these farms depôts for the collection of fibres from the neighbouring agriculturists, provided the prices at which produce is bought up at the farm leave a margin to cover the cost of collecting and transmitting it to the seat of manufacture.

When once the peasantry find out that the plantain trunk, which is allowed to rot where it is cut down, the linseed plant, which is generally thrown away, and the wild plants, which are plentifully growing around them, neglected, or noticed only to be destroyed, can, by a little labour and at almost no cost, be easily converted into products which will add to the income they already derive from their own accustomed crops, it is clear that the cultivation and preparation of fibres will be readily undertaken by them.

When the industry is once fully developed and appreciated by the agricultural classes, the Government can easily withdraw from the field, leaving private enterprise to take its place.

293. In conclusion, I beg to record my grateful acknowledgments to the different officers of Government who have favoured me with information regarding the subject of my inquiry, and whose assistance has helped me so materially in preparing this report. To Dr. E. McDonell, Managing Director of the Serajunge Jute Company; Baboo Huris Chunder Roy, Zemindary Agent

Acknowledgment of assistance received.

at Rungpore of Moharani Surnomoye; Roy Protap Chundra Borua Bahadoor, of Gouripur, Gowaipara; Baboo Joykissen Mukerji, of Wooterpara; Baboo Raj Kumar Roy Choudhuri, of Baruipur; and James Gordon, Esq., of the Gouripur Mills. I have also to express my thankfulness for the ready aid they have afforded me by furnishing me with a variety of details regarding the cultivation, manufacture, and trade in jute. To the first two gentlemen I am particularly indebted for the assistance they rendered to the Commission during our tour in Serajgunge and Rungpore.

I have the honor to be,

SIR,

Your most obedient servant,

HEMCHUNDER KERR,

Deputy Magistrate, on Special Duty.

APPENDIX A.

No. 1.—AGRICULTURAL DEPARTMENT,—Calcutta, 4th February 1873.

THE Lieutenant-Governor has several times remarked that this Government is sadly wanting in industrial statistics, and he trusts that an attempt may soon be made in some shape to supply the want. But meanwhile he would much desire to get some information regarding our greatest commercial staple—jute: where and how it is grown; from what plants; what are the qualities and varieties; how it is prepared for the market; how brought to market; and through what hand it passes, &c., &c. Gentlemen who have come out from home with a practical interest in such questions have lately asked His Honor to answer some of them, and he has been unable to answer them. He has long sought such information himself, and has been unable to get it with precision. An inquirer is constantly beset by the pitfalls caused by the varieties of language and of translation. Mr. Campbell does not know to what language the word jute belongs, nor what it really means. The fibre or fibres commonly called jute are called by the natives by various names, some of which are also applied to other fibres. The Lieutenant-Governor has been shown on the ground, by competent persons, two very distinct plants, each of which was asserted to be *kostah*, generally supposed to be the most specific term for jute; and he cannot discover whether the whole of the jute of Eastern Bengal comes from the same plant as what is called the *desce* or country jute of the districts about Calcutta; in fact, whether the jute of commerce is the product of one plant, or of two or more plants. He has seen it asserted in one report that jute is an export from Bengal to Orissa, and in another that it is an import from Orissa to Bengal. He has been told by very competent men that the quality of the jute brought to market is deteriorating, owing to reckless extension of cultivation in lands not fitted for the purpose; by others, that it is not deteriorating at all. Be that as it may, the question to what extent jute may be extended to new fields, to new districts, or to new provinces, (as to Assam and Burmah), and how far our soils will bear long cropping with it, is one of enormous importance. Mr. Halsey, the Officiating Commissioner of Cotton and Commerce, has been good enough to point out to His Honor some papers showing that the Americans are actively prosecuting the experimental growth of jute in various

parts of their country, while we are, as a Government, doing nothing to extend it. Of almost equal importance is the question, whether the quality of the fibre can be improved by careful preparation, and what are the best processes for its preparation. The necessities of the jute trade must have a very great influence on all our plans for roads, railways, and canals.

2. The Lieutenant-Governor proposes, then, to undertake a sort of jute survey with regard to—

1. The present production including the districts and tracts where it is grown; the plant or plants and varieties of plants grown for jute; the soil and situation used in each part; the mode and cost of growing; the rotation practised; the quantity produced; the effect of various climates and conditions;
2. The extent to which jute cultivation has increased, and may be increased; the nature of the soils and climates in which it may grow; the degree to which soils are exhausted by it, and the degree in which they may be renewed by rotation, flooding or manure; the general prospects of the future production of the article;
3. The preparation of the fibre for the market; the present modes, and the improvements that might be effected in such modes;
4. The jute trade; the quantities exported from each district; the lines and modes of export; through what hands it passes, &c.;
5. All other matters bearing on the subject.

3. This Resolution will accordingly be circulated to all Commissioners and District Officers, to whom will also be sent an explanatory memorandum showing what jute is; by what English and native names it is known; what is the character of the plant, its leaves and flowers; and what are the principal varieties recognized in commerce. Specimens of jute and of other fibres with which it may be confounded will also be circulated; so that each officer may make sure whether the fibres produced in his district are really the jute of commerce or something else. At the same time District Officers are requested to get together all the particulars and specimens they can, deputing, if necessary, one of their subordinates to collect the necessary information.

4. The Lieutenant-Governor proposes to associate a European gentleman, thoroughly well acquainted with the jute trade, with an intelligent native officer, and to ask them to prepare,

first, such a memorandum and specimens as have above been indicated, and then to visit some of the principal jute districts, to collect, collate, and sift the information obtained by local officers, and to furnish the Government with a report on the whole subject, giving a jute survey and a jute map of these provinces, and explaining all the points above mentioned, and as many others as occur to them, so far as the information at their command enables them to do so.

Ordered, that a copy of the above Resolution be published in the *Calcutta Gazette*, and be forwarded to all Commissioners and all District Office for information and guidance.

By order of the Lieutenant-Governor
of Bengal,

H. J. S. COTTON,

Offg. Asst. Secy. to the Govt. of Bengal.

No. 2.—GENERAL.—*Calcutta, the 5th February 1873.*

With reference to Resolution of the 4th instant regarding proposed inquiry into the production and trade in jute, the Lieutenant-Governor pleased to associate Mr. Hamilton Anstruther, Merchant of Calcutta, and Baboo Hem Chunder Kerr, Deputy Magistrate and Deputy Collector, in order to make the necessary inquiries and report. He desires that a copy of the above quoted Resolution be forwarded to them, and that they be requested as soon as possible to prepare, in accordance with the terms of paragraphs 3 and 4 of the Resolution, an explanatory memorandum showing precisely what jute is, by what botanical, English, and native names it is known; what is the character of the plant, its leaves and flowers; and what are the principal varieties recognized in

commerce. They are also requested to select certain specimens of jute and of other fibres with which it may possibly be confounded, and to submit with their memorandum sets of such specimens for circulation.

Mr. Anstruther and Baboo Hem Chunder Kerr will then, after the preparation of their memorandum and specimens, visit at the most convenient season some of the principal jute districts in Bengal, and collect, collate, and sift the information at the disposal of local officers; and, after full inquiry, will furnish His Honor with a report on the whole subject, giving a jute survey and jute map of these provinces, and explaining all the points mentioned in the above Resolution, and as many others as occur to them, so far as the information at their command enables them to do so.

While employed upon this duty, in addition to their actual travelling expenses, Mr. H. Anstruther will receive an allowance of Rs. 600 per mensem and Baboo Hem Chunder Kerr will draw a deputation allowance of Rs. 150 in addition to his substantive salary with effect from 1st February 1873; the expenditure being debitable to Miscellaneous Improvements—(Provincial.)

Ordered, that a copy of this Resolution of the 4th instant, be forwarded to Mr. Hamilton Anstruther and to Baboo Hem Chunder Kerr for information and guidance.

Also that copy of this Resolution be forwarded to the Appointment Department of this office for the issue of the necessary orders in regard to Mr. Anstruther's appointment and to Baboo Hem Chunder Kerr's deputation.

Also that copy be forwarded to the Accountant-General for information and guidance.

By order of the Lieutenant-Governor
of Bengal,

H. J. S. COTTON,

Offg. Assistant Secy. to the Govt. of Bengal

APPENDIX B.

STATEMENTS RECORDED BY THE JUTE COMMISSION IN CALCUTTA AND SOME OF THE JUTE DISTRICTS.

No. 1.—BABOO NUNDO COOMAR SHA,—*Calcutta*,
3rd March 1873.

I have been in the jute business for the last twenty years, and have been working in Calcutta seven years. Before that I was at Serajunge. For the last ten or twelve years the increase in the jute trade has been marked. There are several kinds of jute. The best fibre is that which comes to the Presidency from Serajunge, and it is grown in Kankripara, Bullorampore, Chilmari, Bagia, Sholemari, and Cooch Behar. The color of this jute is white, with a golden tinge, and measuring some seven or eight cubits in length. Serajunge is the largest jute market, and the villages of Shumboogunge, Bahadoorpore, Cassigunge, Pakoollah, Jamoorke, Moyrah, Ruttongunge, Bullah, Babnaparah, Shealkole, and Keshoregunge in Mymensing send their jute to that place. The jute which grows in the vicinity of Serajunge is commonly called *deswal*. The villages of Bhateal, Amirabadia, Nulohuriab, Backrabad, Shoralia and Kuremgunge in zillah Dacca, grow jute largely. That grown at Backrabad and Kuremgunge is very good, and ranks with the jute obtained from Kankripara, Bullorampore, &c. The staple exported from other parts of Dacca is known by the name of Naraingunge jute. All these places send their jute to the mart of Naraingunge for sale and export to Calcutta. The fibre is from five to seven cubits in length, and of a greyish color. The *pat* known as *Deora* is exported from Gopalgunge in zillah Furreedpore. Janipore and Pubna produce jute which is called "*Janiporiah*" jute, measuring five or six cubits in length, and of a reddish color. All the *desi pat* comes from Kanchrapara, Bidyabatty, Nyhattee, Dum-Dum, Belgatchea, &c. This fibre is generally from five to eight and even nine cubits long and has a dull color; some are white and whitish grey. Jute grows on *doasla* lands, i.e., a mixture of clay and sand. The land is tilled and ploughed in the months of Chaitra and Vaisakha (March, April and May), when the sowings are begun. The crop is reaped in the month of Ashadha (June and July). Too much moisture is not good for jute, but moderate showers of rain aid its growth.

As a rule jute is not grown under advances. The ryots grow it of their own accord and on their own account and take to the nearest *hat* or market, where they sell it either to the servants of the *mahajuns* or to *furcahs*, who either buy it for the former, for which they receive a commission of one to four pie per maund, or on their own account. In the latter case, they watch the market, and dispose of their investment as soon as they find the price rising. The jute is then tied into *morahs* (hanks), and brought to the jute depôts, such as Serajunge, Naraingunge, &c., where it is purchased by the traders who tie it up in drums and send to Calcutta. Jute is sent to Calcutta from Naraingunge, Serajunge, &c., &c., either by boats or steamers all the way, or partly by steam boats and partly by rail from Goalundo. The jute on arrival in Calcutta, if it is the property of the *mahajun* who has a firm here, is removed to his godown; if not, it is removed to the agency house or *arat* of somebody, who not only charges rent for the keeping, but one anna in the maund by way of commission. As a rule, these *aratdars* or commission agents advance to the owners of jute thus brought to them two-thirds of the estimated value of the article. These *aratdars* dispose of the jute to the large jute merchants in the Presidency. I know what is called the *mesta pat*, it is grown in small quantities in places near Calcutta, such as Nyehatty, &c. There is a fibre-yielding plant called *dhunchia*. The stems are used for fuel and the fibre for cordage. It is never bought or sold as jute. The price of the best jute now is Rs. 3-12, that of the most inferior kind is Rs. 1-10 per maund. The *Deora* is selling at Rs. 1-10 per maund; the price last year was Rs. 5-12 to 6-0, and Rs. 3-0 to 3-4 a maund. Last year's high price and the steady increase of price year after year induced the ryots to extend the cultivation of jute at the expense of the rice crops; the expectation of the growers, however, has not been fulfilled, and it is safe to anticipate that the cultivation will not be so large next season as it was in the season gone by. The jute plant must be soaked in order to get the fibre; the clearer the water in which the plant is soaked the better the fibre.

No. 2.—BAROO KHETTER MOHUN BOSE,—Calcutta,
5th March 1873.

I live in Calcutta and have been in the jute business for the last 25 years. The increase in the demand for jute has been marked from the time of the Russian War, and particularly so since the American War. It has since gone on increasing steadily, and for the last three or four years the export of jute from the Presidency has been very large. Prior to the Russian War about 50,000 to 150,000 bales, each bale containing 300 pounds of jute, used to be sent to England, America, and France yearly. After the commencement of that war till the outbreak of the civil war in America 300,000 to 500,000 bales of jute were annually exported. When the civil war commenced, the export of this fibre was increased to 700,000 and gradually to 800,000 bales. There has, in short, been a gradual increase of this trade, and at the present time, the jute exported to the European markets is from 1,000,000 to 1,300,000 bales. The fibre received from Serajgunge mart is of several kinds, but two of them (the *uttariya* and the *deswal*) are considered to be good on account of their color, strength, and length. The *uttariya* (northern) jute is grown on high lands, and the *deswal*, generally, on low lands. The *uttariya pát*, some 15 years ago, measured as long as 15 feet in length with fine clean butts. As the demand has been increasing, and the cultivation extending, the quality of this once very good jute has been year after year deteriorating. It is now only four to eight feet long with unclean butts from six inches to one and a half feet. The *deswal* was formerly six to ten feet long, it is now generally four to eight feet. The present price of *uttariya* is Rs. 2-12 to 3-14 per maund. Last year, it fetched Rs. 4 to 5-8 per maund. The price of *deswal* at the present time is Rs. 2-6 to 2-11. Last year's price was Rs. 4 to 4-12. Noarhát, Raneeunge, Mohungunge, Kamárijáni, Chilmári, Sholemári, Bego, Teamári, Kankripára, Gouripore, Cooch Behar, Bullorampore, Bhotemári, Kankina, Kaligunge Aoolia, Gkoramára, Báooréy, Shálmári, Pátákáta, Goherdhona, Boorir Hát, and Chackarchur, grow *uttariya pát*. My-mensing, Pingna, Doál, Jhárátá, Mothoorápárah Cootubpoor, Gossainhati, Sonámooke, Chunderkoma, Ryegunge, Shumboogunge, Bádulpoor Cassigunge, Pooterjáni, Dehooley, Luckhigunge, Bágonbariáh, Babnaparah, Gheor, Sháduckpore and Koijooli, grow the *deswal*.

The other jute mart is Narsingunge in Dacca. The fibres received in Calcutta from this mart are called Bäckrabadi, Narsingunge, Kuremgunge, and Amirabadia. The Bäckrabadi jute is the best, also Kuremgunge, the fibre being six to eight feet long; the Narsingunge fibre is from four to six feet long; and Amirabadia three to five feet long.

This fibre, which finds purchasers in the Narsingunge mart has also deteriorated, but not to the same extent as the Serajgunge jute. The color of Serajgunge jute is much better and more durable than the color of Narsingunge jute,

which turns reddish in a short time. The present price of this fibre is Rs. 2-6 to 2-10. During the last season, it fetched Rs. 4 to 4-8 per maund. There is another kind of jute called *deorá*, of which there are two sorts, viz., Gopaulgunge *deorá* and Mádaripore *deorá*. There is also a kind of *deorá pát* which comes from Shodepoor in Fur-reedpore.

Gopaulgunge *deorá* is four to seven feet long, of a grey color, and of a coarse and brittle fibre. Price this season is Rs. 1-14 to 2-1; price of last year Rs. 2-12 to 3-4 per maund; none in stock at present.

Mádaripore *deorá* is three to five feet long, of

Price this year Rs. 1-4 to 1-10 per maund; last year Rs. 2-12 to 2-14.

Shodepoor fibre the same as Mádaripore; price this year Rs. 1-4 to 1-8 the maund; last year Rs. 2-12 to 2-14 the maund. This jute is wrought into cordage in Calcutta.

The country jute commonly known as *desi* comes from 24-Pergunnahs, Hooghly, Nuddea, Culna, &c. This fibre is soft and clean, being four to twelve feet in length, but it is not strong. Its present price is Rs. 2-4 to 2-12 a maund.

The Serajgunge jute is in greatest demand; jute comes for export also from Booritoláh, Fooltollah and Toolsheegunge in Rajshahye. The fibre is soft and clean, but weaker than the Serajgunge jute; it is four to seven feet long. The value this year is Rs. 2-10 to 2-12 a maund; last year it was Rs. 4-4 to 4-8. Jute at present received from Doolalgunge, Patchaguriáh, and Ryegunge in Dinagepoor was not an article of export in days gone by, but the Greek merchants have, during the last five or six years, been exporting it. There was a brisk export of this variety for two years, but last year the people in England complained of the weakness of the fibre, and a small quantity only has been exported this year. The fibre is four to seven feet long, of a reddish color, but it is weaker than any other class of jute. Gunny is chiefly made of this jute. The color of jute greatly depends upon the quality of water in which the plant is steeped. Muddy water gives the fibre a muddy color; clear water, a fine color. After the seed has germinated frequent moderate showers of rain help the growth of the plant. The charge of pressing jute bales of 300 lbs. each is Re. 1 per bale; Re. 1-5 to 1-7 is the charge of pressing a bale of 350 lbs. This is the charge of a press worked by manual labour, the charge of the screw-press worked by steam-power is Re. 1-8 for a bale of 350 lbs. and Re. 2-6 for a bale of 400 lbs. of jute-cuttings, and Re. 1-12 for that of 350 lbs. Jute-cuttings cannot be pressed by screws plied with hand power.

The preparation of the ground for jute is made in March. After a shower of rain, the seeds are sown broadcast, at the end of that month; when the plants have attained a height of about a foot, they are allowed greater space for growth by the removal of the ill-grown plants. In June and July, the reaping of the harvest commences. The *desi* jute is cut in May. Jute for export is

not as a rule adulterated, but the growers generally bring to market the *desi* and *deora* jute in a wet state in order to increase the weight of the drums.

There is a kind of insect which attacks the jute plants, cuts off their tops, and eats up their leaves, and when this is the case, the crop is a certain failure.

No. 3.—MR. M. DAVID of Dacca,—*Calcutta*,
6th March 1873.

Cultivation of jute has largely increased, probably at least doubled in the eastern districts, during the past three years in consequence of the high price paid.

Most jute and the best is grown in Rungpore and Mymensing. As soon as rain falls in March or April, land is ploughed once, twice, or three times, after which seed is sown broadcast. The crop is cut in June or July, i.e., reaping commences in June and continues till September, but the time of reaping it depends on the state of the market. High prices induce too early cutting which causes inferior fibre. The cost of production is about Rs. 1-8 to 1-12 per maund in the Mymensing districts.

The native idea is that each beegah will yield, say, five maunds, supposing the plants to be five hands high, and one maund extra to each hand higher than the plant may be. The best soil is loam, clay and sand. The present system of cultivation is certainly deteriorating the quality of the jute, as the land is exhausted by continuous crops of the fibre. Chur land does not produce the best jute. High lands produce the best, and hilly lands the very finest. See for example Kankripara and such like places. Cultivators sow jute *anywhere*. Last year they even cleared away bamboo jungle to sow jute! and jute has been grown to the exclusion of rice, &c., to too great an extent. Jute will grow on land that is used for *amun* paddy. There is no regular rotation of crops, but *kulai* is generally sown after jute. Many fibres grow with jute, and are sold as jute. I know of five, namely, *mettee*, *mesta*, *mechut*, *rajuat*, *dhenros*.

Excessive rain and floods make it grow very rapidly, so much so that I have seen it 15 feet high in three months; this does not injure the strength of fibre, but makes it throw out many lateral branches at the top. A dry season does not allow the plants to thrive. The best weather is good early showers and sunshine to give them a good start, and a fair amount of rain afterwards. Floods hurt jute if they are high enough to submerge the plants for a length of time, as they then throw out roots from the stalks which cause the fibre to be specky.

I know of jute cultivation since 1852 when I came to the country. It is considered the most lucrative on the average; it has enriched the population and raised the price of labor. The necessary cereals are still cultivated, though not to such an extent as before. Jute certainly impoverishes the soil. It is seldom manured, sometimes by weeds from the jheels. Jute is

prepared thus:—It should be cut when it blossoms, then steeped in stagnant weedy water for about seven or eight days: the more decomposed matter in the water, the quicker it will rot the jute, and if the fibre is washed afterwards in clean running water, the jute is much improved. An experiment might be made in rotting jute in vats in clean water. The tops do not need so much rotting as the bottom. If length is not looked to, the jute might be cut in two to advantage.

Jute passes from the growers to the *deparies*, who either buy on their own account or on commission.

Last year, 1871-72, Naraingunge exported six or seven lakhs of maunds, and this year, 1872-73, ten to eleven lakhs, excluding direct shipment. Jute is cultivated generally by the ryots who grow cereals, &c., &c.

Jute is known as *nullya*, *dhalsunder* (white jute), and *bidgasunder* (red jute), also *pât*.

I consider *deora* jute to be bad and inferior, because it grows on marshy soil and there is no good water to wash it in. It is the same plant that is cultivated in Serajgunge.

Deora jute is not cut, but torn up by hand.

Mettee is quite distinct from jute in leaf, flowers and all; its seed is black.

Mesta resembles the jute plant but its fibre is coarse.

Mechut is an inferior quality of jute, the seed is different. *Rajuat* is a wild growing fibre totally different from jute. *Dhenros*, distinct from the edible plant Lady's finger, is chiefly made into paper.

No. 4.—BABOO MODOO SUDUN MITTER,—*Calcutta*, 11th March 1873.

I have been in the jute business in Calcutta for the last 30 years.

Kankripara, Sholemari, Chilmari, Bhotemari, Bagoah and Kansharir Chur are the villages in which the best jute, termed *uttariya pâi*, is grown. The jute called *deswal* grows in places not far off from Serajgunge. Jute of somewhat inferior quality comes from Naraingunge. There is another quality of jute which comes from Doolalgunge, another from Sholdanga, another from Jharbori. *Deora pâi* comes from zillah Furreedpore, Gopalgunge, and Madaripore. The *desi pâi* comes from Jessore, Hooghly, Culna, and 24-Pergunnahs. *Uttariya* or the best jute is of a white color with a golden tinge, glossy fibre, and up to fourteen feet in length. The *deora* is the worst kind of fibre, and I do not think it is jute proper. There is a sort of fibre called *mesta*. It is grown in Furreedpore, Madaripore, and Gopalgunge. There is another kind of fibre called *mettee*. It comes to Calcutta in very small quantities along with gunny cloth from Doolalgunge, Sholdanga, &c. The *mesta* plant does not resemble jute plant nor does the *mettee*. *Mesta* is exported separately, but not as jute. I do not know what is *rajuat*. The cultivation of jute is being rapidly extended. The quality of jute is

not on the whole deteriorating, and we continue to see some very fine jute in the market annually, but the supply of the staple has been large, and a large quantity of good as well as bad jute is to be found in it. Gunny is made mostly of Doolalgunge, Sholedanga, and Ryegunge jute. The *desal* jute comes to market first and is brought to Calcutta so early as Ahadha (June and July), *uttariya* follows. The *deora* comes to the market about this time. The price of *uttariya* jute this year has been Rs. 3-8 to 3-12 per maund. Last year it sold from Rs. 4-8 to 4-12 per maund. The price of *desal* this year is Rs. 1-6 to 2-8. Last year it sold at a rupee higher than this season's price. The value of Naraingunge *pat* has been this year from Rs. 2-12 to 3-4. Last year the value was Rs. 3-8 to 3-12 and 4-4. *Desi* is sold at Rs. 2-9 to 2-13. It fetched a rupee higher last year. The present price of *deora* is Rs. 1-12 to 1-14 and 1-15. Last year's price was Rs. 2-4 to 2-12. Doolalgunge jute just commenced to arrive at Calcutta. Last year it sold at Rs. 4 and 4-8 the maund. The native name of jute is *pat* in about Calcutta. It is called *kosta* towards Serajunge. The cause of this reduction in the price of jute in the present season is due to the supply being more than the demand in Europe. The *desi* or country jute is now and then found in a moist state. With the exception of this no adulteration is resorted to in the trade of jute.

No. 5.—SREENHURY SHAHA,—Calcutta,
12th March 1873.

I have been engaged in the jute business nearly 30 years. Jute is known by two names, *vis.*, *pat* and *kosta*. There is another kind of fibre, called *meta pat*. *Mettee pat* is not known to me and I have never heard it mentioned by traders, nor do they know what *rajnat* is. I am, however, aware that there is a place called Methengunge, and a kind of *sun* grows there. Jute is extensively cultivated in the districts of Rungpore, Mymensing, Cooch Behar, and Dacca. A pretty large quantity of it is also grown in the district of Rajshahye, and now-a-days it is cultivated more or less in almost all the districts of Bengal. Jute is known under different names in commerce. The best kind is called *uttariya*. The next best is called *desal*, the next in quality is what we call Dacca Naraingunge *pat*; *desi* jute comes next. Next in quality is the Janiporey or Pubna *pat*. Lastly comes the *deora* jute. *Uttariya* jute comes mostly from Serajunge, and is grown at Kansharir chur, Kankipara, Mankershur, Bagarohur, Chuokarchur, Bullorampore, Behar, Doorgapore, Patamari, Bhotemari, Kankina, Kalligunge, Bagooah, Kamarjani, Sholemari, Chilmari, and Backsirat. *Desal* also comes from Serajunge and is grown in the villages of Pingna, Shoya, Shealkole, Ryegunge, Joomarbari, Bollah, Nagabhureah, Pakoolah, Jamoorki, Babnapara, &c. The Dacca Naraingunge *pat* comes from Naraingunge and grows at Kalligunge, Araleah, Luckpore, Beeratia, Kuremgunge, Backrabad, Bhatal, &c. Shumboogunge, in Mymensing, is a

small jute mart and sends jute direct to Calcutta. Bidyabaty, Serampore, 24-Pergunnahs, and other places near Calcutta grow *desi pat*. This year the cultivation of *desi* jute has been very large, and I may say unprecedented. *Deora pat* grows at Shodepore, Gopalgunge, Madaripore, &c. Backrabad and Amirabadia jute has been mentioned under the head of Dacca Naraingunge jute. There is another kind of jute inferior to the *desal*. It comes from Maldah, Doolalgunge, Ghora Ghat, Debeegunge and Sholedanga.

The *uttariya* and *desal* are in greater demand amongst the traders than any other kind of *pat*. The gunny made at Burranggur and Alipore is from Dacca, Kuremgunge, Janipore, and occasionally Doolalgunge jute. Gunny bags are received in large quantities from Sholedanga, Patchagorah, Debeegunge, Maldah, and Ghora Ghat. *Deora* in this country is mostly used for cordage. The jute in order to be good must be white, glossy, clean, of good strength, and long. Jute grows well on *doas* soil composed of clay and sand. Jute may grow on *atalia* (clayey) soil, but little or no jute grows on *bailey matee* (sandy soil). The longest jute plant is seven or eight cubits in length. My opinion is that the cultivation of jute is gradually increasing, and this year it has increased fifty per cent. over that of last year. This has been at the cost of rice cultivation.

Last year the prices were as follows:—

		Rs. A.	Rs. A.
<i>Uttariya</i> ..	..	4 0 to 6 4	per maund.
<i>Desal</i> ..	..	2 8 to 4 0	ditto.
<i>Desi</i> ..	..	3 0 to 3 12	ditto.
<i>Deora</i> ..	..	2 0 to 3 0	ditto.
Dacca Naraingunge	..	3 0 to 4 8	ditto.
Backrabadi	..	3 0 to 3 8	ditto.
Janiporey ..	..	2 12 to 3 4	ditto.

The present price is—

<i>Uttariya</i> ..	..	2 8 to 4 0	per maund.
<i>Desal</i> ..	..	1 14 to 3 0	ditto.
<i>Desi</i> ..	..	2 0 to 2 8	ditto.
<i>Deora</i> ..	..	1 2 to 1 8	ditto.
Naraingunge	..	2 0 to 3 8	ditto.
Dacca	..		
Backrabadi	..	1 14 to 2 10	ditto.
Janiporey	..	2 0 to 2 8	ditto.

This fall in the price is due to the supply here being greater than the demand in Europe. The quality of jute is year after year deteriorating, and the cultivators in their anxiety to bring to market a large quantity of jute do not pay attention to the careful preparation of the fibre. Cereals are generally grown on jute lands. The growth of jute for three successive years on a piece of land exhausts the soil. Jute is so far an exhausting crop. The *desi pat* has either a brownish or darkish color and is not so glossy as the Serajunge jute. The preparation of the jute ground commences in February and March, and the seeds are sown broadcast in April and May. The reaping of the crop begins in August and September. Jute land is generally ploughed

three or four times, but as a rule it is not irrigated. Both sunshine and rain are necessary for the growth of the plant. The rent of jute land is Rs. 3 the beegah yearly; each beegah produces on an average 8 to 10 maunds of fibre, and the cost of cultivation and preparation of a maund of jute is from Re. 1 to Rs. 2, including rent. Jute comes to Calcutta by boats, steamers, and rail. The bulk is sent down by rail and steamer. Jute is not adulterated. Serajgunge is the largest jute mart. Kamarjani, Rungpore, Kankina, Shumbhoogunge, Naraingunge, Datta Bazar, and Kaligunge are smaller marts. There has been a marked increase in the jute trade within the last 15 years or so. *Meeta pát* grows in Jessore and Backergunge. It goes to Europe along with *deora pát*.

No. 6.—MR. A. CONSTANTINE (of Soobunkolly),—
Calcutta, 1st April 1873.

Ground is ploughed about thrice at different times in different localities; in February on the edges of the bheels, in May (Vaisakha), as soon as the rains commence, on moderately high land, and on the high lands when the rains have fully commenced. As soon as the plant is a foot high, the ground is carefully weeded by a species of hoe (*nirani*).

The ground is not manured as a rule.

A *packi* is 75 hands square, or less than one-third of an acre.

A *packi* would probably yield four or five maunds.

The best soil for growing jute is clay and sand mixed with alumina deposit with sufficient natural moisture not to be affected by drought easily.

The quality of jute has deteriorated of late, because it is grown to such a large extent that the steeping process cannot be properly attended to. The deterioration is not owing to any selection of land. A certain and particular time is necessary for steeping, and if it is steeped too long the fibre loses color and rots.

I know of no rotation of crops. The leaf of the jute manures the land; jute land is used in the autumn for winter crops, seeds, and so forth.

Of other plants which may be confounded with or sold as jute, I know of "*tosa*" of two kinds, one red and the other white; *meglai* also two kinds, red and white; *patlai* has a red stem but a white fibre. *Corch murdun*, *tolla* and *bomee*, may be descriptions of jute (*Corchorus*). The *mechul* or *meeta* is sold separately for paper-making. It fetches a high price. I heard of it bought as high as Rs. 5 per maund this year.

In my district jute is known by the name of *jat pát* which means jute proper. *Tosa* is known in Dacca by the name of *metlee*.

The best jute is grown in the Churs. The further north, the better the jute, up as far as Rungpore, or as far as I know.

At Rungpore the two banks of the river Dolna yield two kinds of jute, *binepar* and *dinepar*, the latter is very good, but the former yields a woody fibre.

Every village near my place cultivates jute.

The *Tista*, raw jute, is very strong in fibre, and has a reddish hue, which, it is said, is given by a plant which is put by the natives over the jute while soaking.

Excessive rain does not spoil jute, if it does not produce a flood large enough to entirely submerge the crop.

Drought stunts and spoils the plant. Jute has been known about my place as an article of trade for the last twenty-five years. Its cultivation has increased greatly of late, having been double since last season.

This cultivation has increased the price of cattle, as the natives were so well off that they kept the very best animals.

Last year in May I could not get men to work, as they were so well off. This year the price of jute having gone down, I can obtain plenty of workmen. I don't think the price of cereals has been affected by the extended jute cultivation.

Soil if manured in November is not, I think, exhausted by jute.

The plants, when in blossom, are cut into bundles and kept on the ground for two days, as it is said the fibre separates more easily. If kept till the seed pods form, the jute gets woody, and is known as *bichalli*. It is soaked for different lengths of time according to the period when cut. The early cuttings take less time as they are soaked in red stagnant water, but as the rains increase, and the water in pools and tanks freshens, longer steeping is needed.

I can suggest no improvement on the present mode. In steeping, cowdung and mud are placed over the plants to make them rot better.

I do not find shallow water discolor the fibre.

Jute fibre, when ready to be separated, is taken off from the butt end near my place, while near Rungpore, in the north, the tips are cut and the woody stem shaken off from the top: this latter is the best way, as it goes with the grain and prevents the jute being towy.

The jute that grows in and about my place is taken to the Serajgunge mart for sale by the *mahajuns*, or their people buy it in the market, where the growers take them for sale during the monsoons. It is safer to send the jute to Calcutta by steamers as far as Goulundo, and thence by the rail, but in the winter season it can be safely sent in native boats. The charge of sending a maund of jute from Serajgunge to Calcutta by steamer and rail during the monsoons is 14 annas to 1 rupee; at other seasons it is only eight annas. During the rains the charge of sending a maund to Calcutta by native boat is two annas less; at other times three annas a maund. The jute passes from the cultivator to the petty *mahajun*, called *jureah*, and from the latter to the *mahajun* who, as a rule, sells it at Serajgunge to the class of people called *khorriddars* or *beparies*. These men take the article to Calcutta.

In and about my part of the district every ryot who has a plot of land, sows it with jute. In my

opinion jute is a safer crop than rice, which requires more weeding and more care than jute. The ryots do not grow under advances. Gunny is made of middling jute, which is neither very good nor very bad.

No. 7.—BABOO NOLIT MOHUN DASS,—*Calcutta*,
18th April, 1873.

I have been engaged in the jute trade at least twenty-five years.

It is five years since the quality of jute has deteriorated. As cultivation increases, so the quality falls off; the reason is that the cultivators cannot bestow the required attention on large quantities. Besides this, good water is scarce and labor much dearer than before. Labor ten years ago was at the rate of eight laborers per rupee, now it is two to four for the rupee. The deterioration of jute both in color and in strength is owing to the scarcity of rain of late years about sowing time. People bring anything to the market for sale, and find a sale for it, hence they do not take the trouble to grow jute.

The best jute comes from the northern parts of Serajgunge. The best *desi* comes from Janai Bazar and also from Atcheepore. Best *deora* comes from Gopalgunge, Sodepore in Furreedpore, and also Madaripore in Burrisaul.

No. 8.—GRESH CHUNDER MOOKERJEE (of Woolta-
danga),—*Suburbs*, 8th July 1873.

My employer, Baboo Radhanath Koondoo, has an agency house at Wooltadanga, on a bank of one of the eastern canals, and our business is to sell jute, linseed, mustard, &c., brought to our firm by the *beparies*, who principally come from Furreedpore. We deal only in *deora* jute, which is brought from Gopalgunge, Shodepore, Tona, and Madaripore. The last place is in the district of Backergunge. Last season we sold 28,000 maunds of *deora* jute at Rs. 1-6 to Rs. 3; and in the season before about 33,000 maunds at Rs. 1-12 to Rs. 3-8 the maund. The weight by which jute is sold in and about Calcutta is of 80 tolahs to the seer. We have to give a *poah* (one-quarter of a seer) over and above the quantity to the seller by way of *dholfi* (brokerage), and sometimes, when the fibre is a little wet, so much as two to five seers in the maund. There is a class of men called *jachunders*, who examine the jute on behalf of the buyers and fix the quantity to be given over and above a maund in case the fibre be found wet, receiving for remuneration $2\frac{1}{2}$ seers of jute for 100 maund sold from the seller or *aratdars*, and the same quantity from the buyer, besides three pie, or nine pies, for each cartload of fibre brought. We sell through brokers, called *dallals*, who are allowed by the seller and buyer separately one pie for every maund sold. The buyers sometimes remunerate the broker at the rate of a rupee for every 100 maunds purchased through him. The seller has also to pay the men who check the weighments. The *beparies* give the *aratdars* four pie for every maund of jute sold by the latter. Godown

hire is not charged for one month, but for periods more than a month. A godown that can hold 2,000 maunds of jute is let at Rs. 15 per month. The *beparies* who bring 200 maunds only will have to pay rateably for the days or months their jute lies in the godown unsold over and above a month. These godowns are either the property of the *aratdars* or leased by them, and they have to pay rent whether they keep jute in them or not. All *deora* jute is brought in country boats *vid* the Sunderbuns. The expense for removing jute from the boat is six annas for every 100 maunds, and four annas for placing it on the scales at the time of sale. This expense is borne by the seller. If the godown be at some distance, the jute has to be carted away at the *bepari's* expense. There is no special rate for cart-hire, which depends upon the distance of the godown from the *arat*. *Deora* jute is mostly brought in drums, but a quantity of Gopalgunge fibre comes in hanks. We sell jute either in drums or hanks as they are received from the district. But fibre brought in a wet state is dried and tied up again. It costs three to four pie to make a drum of jute weighing ten maunds and five seers to one maund and twenty seers. Those *beparies* who choose to receive the estimated value of their jute before it is actually sold, have to pay interest at Rs. 12 per cent. per annum to the *aratdars*, who advance them little less than the market value of the day. If the fibre is sold for more, the surplus is sent to the seller; but if for less, the *bepari* is made to refund the difference. Those who wait till the sale is complete do not pay any interest. There is no fixed time for payment, which is generally made from three days to one month. Some of the merchants of Calcutta buy *deora* jute from us. New jute comes to the Calcutta market from the month of Sravana and Bhadra till the close of the year. About 10,000 maunds of *deora* jute lies in the godown unsold at Wooltadanga. Shodepore *deora* jute has considerably deteriorated, and people attribute this to the insufficiency of the rains. Gopalgunge, Madaripore, and Tona jute has neither deteriorated nor improved. We do not buy *mesta pat*. The *deora* jute generally has a reddish tinge. *Beparies* are *mahajuns* who buy from the growers and *fureahs*, and sell through *aratdars*. *Deora* jute boats are not insured. Including all expenses it costs from Rs. 18 to 20 to bring 100 maunds of jute from Gopalgunge to Calcutta. We do not make any advances to the *beparies*. But when a *bepari* comes to my employer's *arat* with jute worth Rs. 200, we do not hesitate to advance him if he wants 500 rupees. He goes home and sends us other articles for sale. He pays us interest at the rate of 12 per cent. per annum.

The seller has also to pay to the *coyal* (weigh-man) eight annas for weighing 100 maunds of jute. He has also to give the *aratdar* $7\frac{1}{2}$ seers of fibre out of every 100 maunds sold on account of *birti*, that is for *poajah*, and for the weigh-man, who receives half the quantity. Carts only are used in removing jute. Our firm does not deal with itinerant *beparies*. We have *khalgustees*,

who go beyond the Dhappa toll-house, board boats consigned to our firm, and advance from the *aratdars'* funds the prescribed tolls which are subsequently repaid by the *beparies* bringing the boat or boats to our *arat*. Since last season we have also been receiving jute from Rungpore, Bhotemari, Chilakhal, Baoria, Abeeba, &c. This jute is brought down to Calcutta by rail and carted away from Sealdah to Wooltadanga, selling it at Rs. 2-4 to 3 per maund. Some 2,500 maunds of this fibre was sold at our *arat* last season.

The dealings in this jute are conducted on precisely similar terms as the *deora* jute.

No. 9.—RADHANATH KOONDOL (of Wooltadanga),
—Suburbs, 9th July 1873.

Our *arat*, which has been in existence for the last 12 years or more, is at Wooltadanga, by the side of the eastern canal, and we deal in jute, rice, mustard, linseed, &c., &c. We do not buy jute; but we sell it for *mahajuns* or *beparies* and for *bhasa beparies* (itinerant traders). We sold 60,000 maunds of jute in 1278 B.S., and about 50,000 maunds in 1279 B.S.

Seraingunge, Naraingunge, Dacca, Tipperah, and Mymensing jute, as also *deora* jute, are brought to our *arat* for sale. The commission or *aratdari* charged by us is one anna for each maund of jute sold. Those *beparies* who pay at this rate, dispose of their jute from the boats in which it is brought. Those who store their fibre in our godown pay at the rate of five pice per maund, including godown hire. The sellers also pay two annas for each 100 maunds to the weigh-man (this charge is called *royali*), six annas to the coolies who remove the jute from the boats, three annas for placing it on the scales and for hire of carts, for conveying it to the godown, and three pice for each cart for removing the drums from the carts to the godowns; this last charge is called *gharani*. Besides this the sellers have to pay one pice to the man who on the part of the purchaser notes down the weighments, and one pice brokerage per maund. The broker appears on behalf of the purchaser. The *aratdar* is in fact the seller's broker. Besides the above cash charges, the sellers have to give to the *jachundars* (men who on behalf of the purchasers examine the jute) $2\frac{1}{2}$ seers of fibre for each 100 maunds, one-quarter of a seer by way of *dholla* (brokerage) for each drum of jute, and $7\frac{1}{2}$ seers for every 100 maunds on account of *chutki* and *birti*. There are some purchasing firms who pay one rupee for every 100 maunds to these brokers, a few eight annas, some four annas, and others nothing at all.

As a rule, we have to advance money to the *beparies*. There is no particular time for making these advances; but a *bepari* would take Rs. 500 from us in one day, and, a month or two after, bring in their jute to our *arat*. In addition to the commission, we charge them interest at the rate of 1 per cent. per annum for the money advanced. They gradually discharge their debt by paying us a part of the value of the jute sold. It also happens that dishonest *beparies*, after

taking advances, sell their jute, at other *arats*. In such cases we do not charge them more than one per cent. In case any portion of jute is found to be wet or rotten, the *jachundars* make a deduction from each drum, and the price is settled accordingly. The *aratdars* sell jute on their own responsibility, being accountable to the seller for the money. Soon after the sale the proceeds or a part of them are paid to the seller, who then returns to his country. Sometimes the *beparies* themselves, and at other times their agents, come with the cargo, and often they authorize us by letters to sell their jute and remit the money by draft, or send the value in consignment of salt. The *beparies* do not fix a price, but leave it to us to sell it to the best advantage. We sold jute last season at the following rates:—

DACCAL DIVISION.

Per maund.

Rs. A. Rs. A.

Uttariya jute ...	...	2 0	to	3 12
Chowria ...	...	1 12	to	3 8
Deswal ...	...	1 8	to	3 0
Kankripara ...	...	3 0	to	4 1
Gouripore ...	...	3 0	to	4 0
Goberdhone ...	...	3 0	to	4 0
Pata Kata ...	...	2 12	to	3 14
Pata Mari ...	...	2 8	to	2 12
Bagooh ...	...	3 0	to	3 11
Sholemari ...	...	2 12	to	3 8
Chilmari ...	...	2 12	to	3 8
Kamarjani ...	...	2 0	to	2 12
Boorir Chur ...	...	2 12	to	3 8
Babnaparah ...	...	3 0	to	3 12
Jamooriki ...	...	2 12	to	3 10
Pootey Jany ...	...	2 8	to	3 8
Boha ...	...	3 0	to	3 12
Shoya ...	...	2 0	to	2 8
Sheal Cole ...	...	1 10	to	2 8
Elanga ...	...	2 0	to	2 12
Kansarir Chur ...	...	3 0	to	3 14
Pathoria ...	...	2 0	to	3 4
Shumboogunge ...	...	2 8	to	3 4
Teribazar ...	...	3 0	to	3 8
Kaligunge ...	...	2 4	to	3 0
Lukhigunge ...	...	2 4	to	3 0
Hossenpoor ...	...	1 12	to	2 8
Dutterbazar ...	...	1 8	to	2 4
Bagoonbari ...	...	1 8	to	2 0
Baropara ...	...	1 8	to	2 4
Kata Khoti ...	...	2 0	to	2 4
Borali ...	...	2 0	to	2 8
Shoarir Kandi ...	...	2 0	to	2 8
Bhojrub ...	...	2 0	to	2 8
Bajitpore ...	...	2 0		
Madhub Dihi ...	...	2 0	to	2 2
Shumhoopore ...	...	2 0		
Nandea ...	...	2 0	to	2 12
Naraingunge ...	...	2 4	to	2 8
Modungunge ...	...	2 4	to	2 8
Kolagatchea ...	...	2 4	to	2 8
Kykertak ...	...	2 0	to	2 6
Bydeah Bazar ...	...	2 0	to	2 4
Baroparah ...	...	2 0	to	2 4

	Per maund.	
	Rs. A.	Rs. A.
Noyabhangani ...	2 0	to 2 4
Araleah ...	2 8	to 3 0
Poobali ...	2 8	to 3 0
Borni ...	2 8	to 2 12
Kotiadihi ...	2 0	to 2 8
Kuremgunge ...	2 0	to 2 12
Bakrabad ...	2 0	to 2 12
Bhowal ...	2 0	to 3 0
Shampore ...	3 0	to 4 0
Gheore ...	3 0	to 3 12
Manickgunge ...	2 8	to 3 0
Jafurgunge ...	2 0	to 2 12
Jhitka ...	2 0	to 2 8
Terasri ...	2 8	to 3 4

DISTRICT TIPPERAH.

Shoral ...	2 0	to 2 8
Lolgunge ...	2 0	to 2 8
Mirja Chur ...	2 0	to 2 4
Chowrapara ...	2 0	to 2 6
Aga Nagore ...	2 0	to 2 6
Sremuddi ...	2 0	to 2 5
Sonarampore ...	2 0	to 2 6
Radhanagore ...	2 0	to 2 5
Digholdi ...	2 0	to 2 5

RAJSHAHY DIVISION.

Booritalah ...	3 0	to 3 8
Toolsigongah ...	3 0	to 3 8
Phooltollah ...	3 0	to 3 8
Booridha ...	2 12	to 3 4
Pubna ...	2 8	to 3 0
Muthoora ...	2 0	to 3 0
Kalikabari ...	3 0	to 2 12
Tarapooriah ...	2 8	to 3 4
Berah ...	2 8	to 3 0
Shajadpore ...	2 8	to 3 0
Dinagopore ...	2 0	to 2 12
Bhooshee Khansama ...	2 0	to 2 12
Nowgya ...	2 0	to 2 12
Jeagunge ...	2 0	to 2 12
Doolalgunge ...	2 0	to 2 4

RUNGPORE.

Bhotmari ...	3 0	to 3 8
Chilakiel ...	2 8	to 3 4
Betobari ...	2 8	to 3 4
Tamhoolpore ...	2 8	to 3 4
Bowriah ...	2 8	to 3 4
Abila ...	3 0	to 3 12
Kissoregunge ...	2 0	to 3 0
Ghoramarah ...	2 0	to 2 8
Kankina ...	3 0	to 3 8
Kaligunge ...	3 0	to 3 8

JESORE, BACKERGUNGE, AND FURREEDPORE.

Chandpore ...	1 4	to 1 12
Buzarkhola ...	1 4	to 1 12
Auguriah ...	1 4	to 1 12

	Per maund.	
	Rs. A.	Rs. A.
Selanpore ...	1 8	to 1 11
Madaripore ...	1 0	to 1 8
Bhangah ...	1 0	to 1 8
Rajoi Gopalgunge ...	1 0	to 1 7
Gopalgunge ...	1 4	to 2 0
Tona ...	1 4	to 2 0
Purulia ...	1 4	to 2 0
Sodepore ...	1 4	to 1 14
Joynuggur ...	1 4	to 1 14
Rajpat ...	1 8	to 2 0
Jungipore ...	1 8	to 2 0
Deora ...	1 0	to 1 8
Kassimpore ...	1 0	to 1 8

A larger quantity of jute is brought in country boats than in steamers and by rail. All the *deora* jute is imported in country boats. Jute from Naraingunge and Serajgunge is sometimes brought in steamers and by the railway. The cost of bringing jute is less in country boats than in steamers and by rail. The cost of conveying 100 maunds of jute from Naraingunge to Scaldah by the Eastern Bengal Railway Company's steamer and by railway is from 4½ annas to 12 annas, the rates being raised and reduced according to season. In the months of August, September, and October the freight is high. From the month of December the rate is gradually lowered. It costs from 3 annas to 7 annas to bring the same quantity of jute in country boats. Jute is brought in boats of 50 to 3,000 maunds burden.

The Kankripura jute is valued the most in the Calcutta market. The fibre is of fine color, glossy, strong, and free from bark. Baboo Nolit Mohun Doss used to buy the best jute. Next to it is the Teri Bazar Shumbhoogunge jute. Last season the Babnarah and Gheore jute was very good. The Burranagore jute factory people buy jute of medium quality. We do not deal in *desi* jute; we remit money to the *beparies* in *hoondies*, and we charge 4 annas to 1 *upce* *hoondean* for every 100 rupees.

No. 10.—MADHUB SHANTRA (*of Balindar*),—
Burdwan, 5th April 1878.

I hold twenty beegahs of land, a small portion of which, namely fifteen cottahs, is allotted to jute. I have commenced the jute cultivation for the last two years. I grow *desi* jute, the leaves of which are generally green. One or two of the plants have red stalks and red veins in the leaves. I got last year five maunds of jute which I sold at Rs. 2-4 per maund. I cannot with any degree of positiveness say what has been my profit, but as a rule we do not employ hired laborers, we ourselves work in the field; hence even the low price of my jute last year did not make me a loser. In the year before, I made a good thing of my crops, for I got Rs. 5 for each maund. The *paikars* came to our houses and bought up the staple for the Calcutta market. We grow jute on *dona* land, which is grown with potatoes in Kartika. If rain falls in February the tillage

commences, and the jute seeds are sown in Vaisakha after a shower of rain.

The cost of cultivation is as follows:—

	Rs.	A.	P.
Four times ploughing ...	1	0	0
Two and half seer seeds ...	0	5	0
Manure (cowdung) ...	0	10	0
Twice harrowing ...	0	12	0
Twice weeding ...	2	0	0
Cutting ...	1	0	0
Separating the fibre ...	2	8	0
Rent ...	2	8	0
Total ...	10	11	0

The ground is well manured for the potatoe crop with oil-cake, so that cowdung suffices for jute. Jute is an exhausting crop; we do not therefore grow jute for two or three years continually on the same plot of land. Almost every other year *aus* takes the place of jute. Late paddy does not grow on jute or *aus* land. I also grow *kulai* on jute lands. It takes the place of potatoes. The steady increase in the demand for jute and the high price it fetches induced me and my neighbours to grow it. I do not grow jute under advances; I do borrow money from the *mahajuns* for growing jute and other crops, but my creditor does not take jute. Last season's price was discouraging. All the jute that was grown in our village last season has been sold. I have prepared a beegah of land for jute, and am only waiting for the rains. In Sravana and Bhadra I cut the jute-plant when in flower, for it rots sooner than the plant in seed, and the fibre it yields is finer. We keep some plants for the seeds. After cutting, the stalks are kept in the field for two days; this is done to secure quick rotting. The steeping is done for fifteen days. The seed-pods take twenty days to rot. I know that the fibre gets discolored if washed in dirty water, but I am helpless. I cannot afford to take it to a distant place for good water; I wash the fibre in the pool where the plants are steeped. I produce sample of jute grown by me. I break the stalks a little above the lower end ere separating the fibre.

No. 11.—JABKEP HALDAR (of *Ekluckhi*),—
Hooghly, 7th April 1873.

My holding consists of 40 beegahs, out of which I cultivated 20 beegahs last season with jute. This coming season I shall not cultivate more than 10 or 12 beegahs. I still hold about 71 maunds unsold. I have been offered Rs. 2 to 2-4; I am expecting Rs. 3. In my neighbourhood all who could afford to hold on, have done so. I should say that of the last season's crop 10 annas still remain unsold. I will wait another year to get a better price. I shall not mix the old with the new crop. The cost of production is—

	Rs.	A.	P.
Rent ...	4	0	0
Six ploughings and harrowings ...	2	0	0
Mowing ...	3	0	0
Weeding ...	3	0	0
Cutting ...	1	0	0
Steeping ...	1	0	0
Separation of fibre ...	1	0	0
Total ...	15	0	0

The outturn per beegah is three to six maunds. My total outturn from 20 beegahs last year was 66 maunds. The above estimate of cost of production, it must be borne in mind, is approximate, as the labor is my own and not paid for. I sow the seed in the latter end of Vaisakha if rain falls. If rain falls now (April), I can't sow as the growth would be checked. I also sow in Jyaistha. I cut the plant when the flowers appear. I only keep some plants for seed. I use the sticks as fuel for manufacturing molasses, and in my own kitchen. Plants cut when in flower yield a finer fibre than those cut when the seed-pods appear: but the outturn is not so heavy. If left till the seeds ripen, the fibre is rough. This is only done by those who cannot pay for labor. I cut my jute when plants are flowering instead of waiting for the best time, just as the seed-pods appear, because by so doing I have time to sow my paddy (a peculiar coarse paddy called *kalangi* or black paddy). This I sow on the land from which I had cut jute. On the jute land from which I cut jute later, *i. e.*, after the appearance of seed-pods, I sow pulses. I take seed from the best plants. After cutting the plant I stack it for three nights to rid it of leaves, otherwise they would be very heavy, and the leaves would stick to the plant and hinder the rotting of the fibrous parts of the plant. If soaked at once it produces a better fibre. It makes no difference in weight whenever soaked. Plants cut when in flower take 11 to 12 days steeping; those cut when in seed take 18 to 20 days. I steep the plants in clean water. If the water is dirty, the fibre will be dark; if steeped in a large sheet of clean water the fibre will be white. I know of the following three kinds of jute: *teeta*, *desi*, and *Luckhipore*. Their differences are—the last-named plant has few seed pods and few branches; the *desi* is short, with many lateral branches; *teeta* is short and reddish, and its seeds globular. The *Luckhipore* seed-pods are long. I use cowdung, fresh earth, and oil-cake for manure; the last-named only for very inferior kinds of land. Last year I purchased about eight maunds of oil-cake for five beegahs of bad land. The best soil for jute growing is *altial* (clay) soil, and next to it *doas*, *i. e.*, clay and sand mixed.

I have known jute cultivation all my life. It has increased greatly during the last 20 years. *Beparies* or *mahajuns* come to my house, and take the produce of my fields away on pack-bullocks or carts to Calcutta. The cost of transit from my place to Bally is about one anna per maund. I take no advances for growing jute, but sometimes I borrow from the *mahajuns*, who at times take the jute grown in liquidation of the debt at a somewhat less than the current market price. The interest on loans for the cultivation of rice and jute is two pice per rupee; the latter pays best, and is attended with less risk.

In steeping, the top or thin part of the plant is kept so as to be on the surface of the water, but the bottom or thick part is put under water; but after seven days the whole is submerged. The people in our village have this year sown about

30 beegahs with jute; last year they had a cultivation of no less than 200 beegahs.

No. 12.—GOPAUL CHUNDER MANDAL (of *Khurial*),
—*Hooghly*, 7th April 1878.

I have an agricultural tenure of 50 beegahs, out of which I grow jute on six beegahs. In these 50 beegahs there are low lands which are unsuitable to the growth of jute. I grow only *Luckhipore* jute. I know of another kind of jute called *desi*, but it grows short and throws out lateral branches. There is another kind of jute called *mesta pat*, of which we have a limited cultivation. The leaves of the *desi* and *Luckhipore pat* are green, but those of the *nalita* are reddish. If there is a seasonable fall of rain in Vaisakha, I intend sowing jute on five or six beegahs; but if the rains fall later, I think I shall limit the cultivation to two beegahs. The last season's outturn was 20 maunds, which I have not sold. On the contrary, I have bought some for the purpose of selling to advantage; but the price has gone down, and in expectation of a better market I have kept the jute. I sold jute last year at Rs. 3-12 per maund. This year in the early part I had an offer of Rs. 3 per maund, but I did not sell it at that price. At the present moment the price of jute is Rs. 2-8 to 2-12. In our part of the zillah well-to-do agriculturists and substantial people have not sold their stock, but the poor people have done so. One-fourth of the jute grown in our village has not been sold owing to low price. The cost of cultivation per beegah is as follows:—

	Rs.	A.	P.
Five ploughings	1	8	0
Weeding ...	1	8	0
Cutting	1	0	0
Steeping	1	0	0
Separating	1	12	0
Rent	3	0	0
Total	9	12	0

I do not put manure on all my lands, but I do on poor soil. On some plots I put in fresh earth, on others I throw cowdung, and on very poor soil I put in oil-cake. Each beegah costs me Rs. 2 to 3 on account of manuring. *Doas* land, i.e., soil mixed with clay and sand, is favorable to the growth of jute. *Atial mati* and sandy soil do not favor the growth of jute. The land for jute is tilled from Falguna, and the seeds are sown in Vaisakha after a shower of rain. When the plants are about three inches high, we weed the ground; when the plants grow up a little more, we pluck out a few ill-grown plants. At the latter end of Bhadra, when the jute is in flower, we commence cutting. We keep the plants in the field for three or four days for the purpose of getting rid of the leaves. Unless the leaves are got rid of we find it difficult to remove the stalks to the pools, and if they are steeped with the leaves on, the fibre

gets discolored. The steeping goes on from 14 to 20 days in cold water, or rather in pools not exposed to sunshine. The jute does not rot soon. I wash the fibre in the water in which I steep the stalks. The jute is then dried for four days but not continuously. After a day's exposure, the fibres are kept in the shade for two or three days and then again dried, and this process is repeated. The *jureahs* purchase jute at our houses and sell it to the Calcutta *mahajuns* and to the owners of mills. As a rule, jute is not grown under advances, but there are a few ryots who receive advances to grow jute, which they sell to the party advancing at a price settled at the time the advances are made.

In certain instances the party advancing money charges interest at the rate of two pice per rupee, and takes besides a seer of jute for every maund contracted for. Contracts are sometimes verbal and at other times written. The purer the water the finer the color of jute. The more stagnant the water, the sooner the separation of the fibre takes place. Stream water will not do. On some land I sow after the removal of jute, *kalandi*, *Sylhet*, and *Shabang dhun*. On others I sow *kulai* in Kartika. After the reaping of the paddy some make an attempt at getting a crop of *teora kulai*, but the yield is poor. *Pat* is more profitable to the grower than early rice, if it is sold at Rs. 3-8 to 3-12 a maund. *Aus* paddy is cut about the time the jute crop is reaped; perhaps a few days earlier. Jute is not deteriorating, as a rule, but growers who cannot manage to cut the plants in time, generally get inferior jute. On about 150 beegahs of land in our village *pat* is grown. The cultivation has within the last ten years increased two or even threefold. I am not aware of any wild *pat* being grown in my village. The people of our village used to prepare gunny-cloth three years ago, but they do not do so now. There are villages in our neighbourhood where gunny cloth is manufactured; it is made of *desi* as well as *Luckipore* jute.

No. 13.—KALOO SHEIK (of *Atthi*),—*Hooghly*,
15th April 1878.

My native village lies on the extreme west of the Hooghly district, and borders upon the district of Burdwan. Our village grows jute from the last year. I have sown jute only once, i.e., in the last season, when I cultivated sixteen cottahs of lands with it. It had never before been grown in our part of the district. As jute found a ready market, sold well, and could be safely grown on potatoe lands, we took to its cultivation. We got some jute seeds from the Krishnagur district. They call it *desi pat*. We sowed the seeds at the latter part of Vaisakha, and cut the plants in the month of Bhadra, when they had commenced to seed. The season was unfavorable to the growth of jute, in as much as the rain was not plentiful. I did not, however, manure the jute lands. I got four maunds of fibre valued at the market rate of Rs. 6-8. I had previously grown

potatoes on the same land. It cost me for growing the crop as follows:—

	Rs.	A.	P.
Seeds ...	0	2	0
Thrice ploughing ...	1	0	0
Twice harrowing ...	0	8	0
Once weeding ...	1	4	0
Cutting ...	0	12	0
Separating fibre ...	0	15	0
Rent of sixteen cottahs	2	4	0
Total	6	13	0

My expectations were not fulfilled, and I suffered some loss. Being alone I had to employ hired labor. I grow jute on *doas soona* land. I kept 900 sheep upon it for three days, giving the owners Re. 1-14 for keeping them. The land was well manured by the sheep, and I grew potatoe on it. Jute then followed, and I did not put any fresh manure. A local dealer bought the fibre from me and sold it in the Mungra market to the *paikars*. I am going to grow jute on one and a half beegah of land in expectation of a market better than last year's. In order to get rid of the leaves, I exposed the stalks in the field for two days, and then steeped them for twenty days in a pond belonging to another person, to whom I had to pay four annas. All the fish that was in that pond died, and the water got spoiled. Water full of decomposed vegetable matter rots the fibre more quickly than fine water. *Fool pat* yields the finest fibre. We used the reeds in cooking our food. I washed the fibre in the pond where I had steeped it. Last year there was not sufficient rainfall. Jute is more profitable than *aus* rice. I produce a sample of the jute prepared by me.

No. 14.—GOPAUL CHUNDER DASS (of Madarpur),—
24-Pergunnahs, 22nd March 1873

Out of my holding of 16 beegahs I cultivate about three beegahs of land with jute. This year if there is a seasonable fall of rain in Vaisakha, I shall continue to cultivate three beegahs, partly on the same land and partly on fresh land. I manure with cowdung. I obtain from a beegah of land, in a favorable season, six to seven maunds. I obtained during the first season Rs. 2-8 to 3. I got last year Rs. 4 to 5. Unless I get Rs. 3-12 to 4 per maund, jute does not pay me.

The cost of cultivating jute is Rs. 9 per beegah, including reaping of the pulse crops I sow previous to the jute. I know of three kinds of jute which were cultivated in my district ten years ago, *meta*, *teela*, and *desee*, but it was found that their fibre was coarse and yield short. They have given way to the Luckhipore jute. This is now called *desee* in Calcutta. I do not know where it came from.

The *paikars* come to the houses of the growers, buy the fibre, and then cart it to the temporary depôts where they dispose of it to the *mahajuns* who take it to Calcutta for sale.

I am now preparing the ground. I plough it at least five times, perhaps oftener. I sow the

seed broadcast in the month of Vaisakha after the first shower. When the plants are a foot high, I harrow the ground to thin the crop. I then hand-weed the ground twice. About the 15th Bhadra the plant flowers, and cutting is commenced. All about my district it is cut when in flower, better fibre is then obtained. Labor is then dearer. After cutting, I stack the plant to rid it of leaves, which, if not got rid of, add to the weight and make the plants sink in water. I then divide the plants into two classes, long and short. I then tie the plants in bundles of a sufficient weight to be carried by one man each. I then steep them for 10 to 12 days, if the water is stagnant, but if not stagnant, for 17 to 20 days.

There should not be more than three to four inches of water over the plants. I do not need to turn the plants, as I place clods of earth on them to keep them entirely submerged.

The dirty water (i. e., stagnant water) affects the color of the fibre, but it has an advantage over clear water, in as much as it prepares the fibre quicker.

It would be an advantage to wash the jute in clear water after soaking, but it is not done.

Jute cut late, i. e., after flowering, produces a reddish-colored fibre. Too much steeping weakens the fibre, and makes it of a dark dirty color. The jute of Nyehattee is better than that of Baraset; it is clearer, and more attention is paid to it in the former place.

In my part of the country, last season's high price caused the cultivation to be doubled. I do not think as much will be grown this coming season. I think that the fibre is better now than it was ten years ago; before that time it was only grown in small quantities for home consumption and not for export.

Four seers of seed suffice for a beegah. The dried reed is sold for fuel to those who make molasses.

After preparing the fibre, it is dried for two days.

About four-annas of the last crop still remain in Nyehattee in the *mahajun's* hands generally.

No. 15.—KADER MANDAL (of Baraset),—24-Pergunnahs, 22nd March 1873.

I am a grower of jute. I grew jute on two beegahs of land and sold it at Rs. 2-8 a maund this season. In the season previous, I sold the fibre at Rs. 3-8 to 4 a maund. If rain falls in the month of Vaisakha next, i. e., a month hence, I intend cultivating jute as last year. I grow the Luckhipore *bagi pat*. Some years ago, I used to grow *teela pat*, but I had to give it up for want of seed. I was also in the belief that the jute mills in and about Calcutta would not like that jute. The *teela pat* has the best color, but is not so long as the Luckhipore. There are two kinds of *teela pat*, one is called the *dhoti*, the leaves of which are green, but smaller than those of Luckhipore, being of a globular make, the other kind has leaves with red veins. We all

here grow the Luckhipore *pdt*. There is another kind of jute called the *mechut*. I used to cultivate it in days gone by; but gave it up in favor of the Luckhipore jute. The preparation of jute land commences in the month of Kartika, and it is ploughed 10 or 12 times before the seeds are sown, which is done at the latter end of Vaisakha or the beginning of Jyaishtba. After that, it is almost useless to sow jute, for the season advances and the crop fails. Jute in many parts of the district grows on high lands, and in *doos* soil (mixture of sand and clay), where *aus* (early) rice grows. It does not grow on low land where the water accumulates. The cost of ploughing comes to about Rs. 8. After the seeds are sown, the land is harrowed once or twice. Jute land is, as a rule, weeded once, but if the season be a particularly rainy one, it is weeded once more for the removal of the grass. The cost of harrowing is included in that of ploughing, and the cost of weeding is Re. 1-8 the beegah. I pay a rupee for cutting, and Rs. 2 for steeping the stalks, separating the fibre, and washing it. The rent of a beegah of first class jute land, which must be the *soona* land, is generally Re. 1-8 per annum. Jute is a crop exhausting to the soil. The cultivation of jute has gradually increased during the last 10 or 12 years. Last year the cultivation was larger than the previous year. The high price it fetched during the last season induced the agriculturists to extend their cultivation. My holding consists of 80 beegahs of arable land; jute has been a source of loss to me this season. In the month of Kartika, we sow *mator*, *mosoor*, *kulai*, or linseed upon jute lands. In Magha we remove this crop, and then jute follows. Unless the land is manured with cowdung and refuse of houses, and unless fresh earth is piled thereupon, jute will not grow well. It is more profitable to the growers to cut the jute plant in Bhadra and Aashina when it flowers than when it seeds. But one cannot do that always, for want of labor, and it has to be kept on the ground till it seeds, when the fibre gets coarse and consequently does not command a good price in the market. After the reaping, the jute plant is stacked in the field and exposed to sunshine and dew for three or four days by which time the leaves drop off and the reeds become light enough to float, and to be exposed in water to the action of the sun. The stalks are then removed to a stagnant pool of water, where they are steeped for 12 to 25 days according to circumstances. Sometimes these bundles in the state of steeping are turned in the water. The flowers of jute of all varieties are of a yellow color and of one and the same size. One day's drying is quite enough for the fibre, and if we sell it at our houses, we do not tie it up in drums, but we do that if we take it to the depot. Sometimes ryots, when pressed for money, take a small quantity of jute to the nearest market. The greyish color in jute is produced by the plant being cut too late, or in other words, not being cut when in flower. The reddish color is obtained by the reeds not being properly steeped in water. Steeping too long spoils the fibre, which loses strength and color. The yield

of fibre from plants grown on a beegah of land is from two to five maunds. Too much rain spoils jute, for it gets red and throws up branches, and too much drought prevents its growing high enough. We prefer paddy to jute, we are so much accustomed to the former. We do not grow any other fibrous plant.

No. 16.—NUCOOR CHUNDER SHAMANTO (of Meerhat),—24-Pergunnahs, 22nd March 1873.

I am an agriculturist and have a cultivation of 20 beegahs of land, on one and a half beegah of which I grow jute. I have been growing jute for the last 10 or 12 years. I grow like all my neighbours, Luckhipore *pdt*. Some 10 years ago there was *desi pdt*, but now we grow nothing else but Luckhipore. The land is prepared in Kartika and *kulai* and *mottor* are sown in it. This crop is removed in Magha, and after a shower of rain the land is tilled about ten times until Vaisakha, when, after another shower the seed is sown broadcast, and after third shower, when the seeds have germinated, the harrow is passed in order to thin the plants. When they are about half a cubit high the grass is hand-weeded, a few days after there is another weeding, and the plants are then left to grow without any further care from the growers. In Bhadra, when the plants flower, the reaping is commenced. After reaping the plants are stacked in the field for three days to allow of the leaves falling off. They are then divided into three classes, *viz.*, the tallest, those of middling height, and the shortest; they are then tied into bundles of such size as a man can carry, and are steeped in the water of the Soote Nuddee. Then we place plantain leaves upon the plants to protect them from sunshine. The roots are sunk into the water more than the tops so as to allow time for their perfect rotting. After ten or twelve days the tops are sunk deep as the lower ends. After 15 or 18 days' steeping the stalks are taken out, the lower ends are broken off to the extent of a foot and a half and shaken in the water, the fibres then separate. We dry the *pdt* for three days. We sell it at home. It is purchased by the *paikars*. This season the price I got was Rs. 2-4 to 2-12 a maund. Last season I got Rs. 4 to 5 a maund. The jute prepared by us has a fine white color. This is owing to the good water of the Soote river where we steep the plants and wash the fibre.

Jute plants ought to be cut ere the seeds appear, for, after that, the fibre gets coarser. The cost of cultivation of a beegah of land with jute, including soaking and drying, is Rs. 10 to 12. A beegah of rich soil yields four maunds of fibre. Rs. 4 per maund would ensure some profit. *Pdt* is more profitable than rice. Until last year jute cultivation was on the increase, but this season's price has discouraged the growers. No other fibre is prepared in our locality. We only grow *ahan* and *pdt*. The length of the jute grown by us is four or five cubits. We manure the jute land with cowdung and house-refuse. *Shoopoka* occasionally attacks and destroys jute plants. There is another kind of blight which is prejudicial to

the growth of jute. In the months of Ashadha and Sravana, when the plants are about breast high, the leaves get crumpled up and the growth of the plant is checked. I do not know what is *meeta*.

No. 17.—BANSI SIRDAR (of Barripore),—24-Pergunnahs, 3rd April 1873.

I am the holder of an agricultural tenure consisting of 40 beegahs of land, of which 10 beegahs are *soona* or high lands, and the rest *sali* or low paddy land. Last year I cultivated four beegahs with *desi meeta pat* and the yield was 11 maunds of fibre, which I have not yet sold. The price this season has been so low that I have not thought it advisable to sell the produce. I was offered Rs. 2 a maund. If I get Rs. 3 a maund I can sell it. Rs. 2-8 a maund will not cover the expense of cultivation, which is Rs. 9 to 10 including rent, which is Rs. 1-8 the beegah. I am a ryot. The *Korefa* ryots or under-tenants pay Rs. 2-8 and 3 the beegah. The market being low, I do not intend to sow any jute this year for sale; I am thinking of growing early rice and chillies on the land which was last year devoted to jute. The cost of cultivating *aus* paddy is Rs. 5 the beegah, including rent. I place fresh earth upon the jute land as also manure it with cowdung. I do not buy either cowdung or earth. At the commencement of Falguna the *kutai* is removed from the jute land, and I plough it up five or six times for jute, and sow the seeds in the middle of Vaisakha after a shower of rain. *Pat* requires more looking after and care than rice. Jute if sold at even Rs. 3-8 a maund is profitable, and more profitable than rice. Jute is known in our part of the district by the term *pat*. There are four sorts of jute, viz., (1) *desi*, (2) *teeta*, (3) *meeta*, and (4) *bungital*. *Bungital* grows on low land, also *meeta*. *Teeta*, *meeta*, and *desi* grow on high land. The fibre of *teeta pat* is whiter and finer, but it does not come up to the *meeta* in length. I am 45 years old, and I have all my life seen jute grown. The cultivation, however, has increased during the last five or six years. Each beegah yields three to three and half maunds fibre in favorable seasons. The plants of *teeta pat* are reddish; those of *meeta* are green. The leaves of the former are somewhat circular with red veins, those of the latter are green and long. The seed-pods of the *teeta* jute are globular. Those of the *meeta* are elongated. The *bungital pat* plants and leaves are reddish. I cut the plants in Aswina when there are few or no leaves on them, and when there are seeds. I then cut the top in order to get rid of the small branches, and to secure the easy separation of the fibre from the stalks. Even if I can secure assistance, I cannot steep the plants immediately, for unless I dry the stalks for a day or two, their weight in the raw state will make them sink in the water. I am prepared to prove this in the proper season. The *beparics* come to our houses and buy up the jute.

No. 18.—BHOLA NATH GHORAMI, (of Cullianpore),—24-Pergunnahs, 3rd April 1873.

I am an agriculturist, and hold a tenure of ten beegahs of land of which I cultivated three beegahs with *pat* last year. This year I intend to reduce the cultivation to two beegahs, owing to the low price of last year. The remainder of the holding is given partly to the cultivation of *sunu* and partly to that of *paday*. The cost of cultivating a beegah with jute is as follows:—

	Rs. A. P.
Six ploughs ...	1 8 0
Weeding ...	0 10 0
Cutting and steeping	1 4 0
Separating the fibre	0 12 0
Rent ...	2 8 0
Total	6 10 0

Generally, I with my family do the ploughing, weeding, cutting, &c. The average yield of a beegah is three maunds, and I sold last year at Rs. 3-8 to 4 the maund.

The cost of cultivating a beegah of land with *sunu* is as follows:—

	Rs. A. P.
Seeds ...	0 12 0
Four ploughs ...	1 0 0
Cutting, steeping, and separating the fibre	2 8 0
Rent ...	2 8 0
Total	6 12 0

The yield of a beegah is 1 to 1½ maund of *sunu*, and the price of a maund is Rs. 4 to 6.

The cost of growing *aus* rice is—

	Rs. A. P.
Ten seers seed	0 3 0
Six ploughs	1 8 0
Weeding ...	0 15 0
Reaping ...	0 15 0
Threshing	0 3 0
Total	3 12 0

The yield of a beegah is 4 to 5 *coorees*, valued at Rs. 4 to 5. Besides the expense already spoken of, we have to pay *rat* to the zemindar at the rate of Rs. 2-8 the beegah. Besides the paddy, we get 8 *pons* of straw from each beegah, and the

matial land is favorable. There is no mixture of sand in the soil in our village. In the month of Kartika the land is tilled and *kutai* sown on it immediately after. In Magha following or in Falguna the *kutai* is reaped and harvested; we have to spend about Rs. 3 a beegah for the cultivation of *musoor kutai*. The yield is generally one and a half *cooree*, valued at Rs. 3-4. In Chaitra or Falguna after a shower of rain, the land is ploughed, and in Vaisakha after another shower, the seeds of jute are sown after ploughing twice or thrice and putting fresh earth on the land. When the plant grows up to five inches, the harrow is passed on. Generally jute land is weeded once, but in particularly rainy weather it requires another weeding. At the latter end of Aswina, the cutting of jute commences. Some people cut the jute earlier when the plant flowers; we cut the plants

when they have seeded. After cutting I allow the plant to remain scattered in the fields. This I do for want of leisure and hands. After three or four days, I tie the stalks into bundles and remove them to the nearest pool of water where they are steeped for 12 or 14 days, perhaps more; I steep the jute in clear water. After separating the leaves, the fibre is dried for four or five days. The *paikars* come to our house and buy the produce. I got Rs. 2 for the fibre I prepared this season. I get the seeds from the best plants in the centre of the field. I have carried on jute cultivation from a long time. I grow *desi pat* only. There are two kinds of *desi pat*, one *leela* (bitter), and one *meela* (sweet). The seed-pods of the former are globular, those of the latter are elongated. The sweet *pat* is longer than the bitter jute. The leaves of *leela pat* are smaller than those of *meela*, and have red veins which are not seen in *meela pat* leaves. The stem of the *leela* jute is also red: There is a kind of jute called *bunglah*, it grows on low land, and is sown in April. The preparation of the fibre begins at the lower end of the plants where the fibre is stronger than that at the top. I know *meela pat*; it grows in March. The leaves of *meela* are roundish.

No. 19.—NOZOKRISTO ARI, SHOOBOL CHUNDER DAES, BHOLANATH ARI, MOOKAM MOLLAH, ESABDI GAZI, of Sunderbun Grant, Bhubanipore, 24 Pergunnahs, 27th August 1873.

We are cultivators and have been growing *kosta* for 4 or 5 years. We grow what we call *nalita koshta*; the seed-pods thereof are globular, and the leaves are bitter; the leaves are called *nalita*. Those plants, the leaves of which are sweet and the seed-pods elongated, are called *bangi*. We grow small quantities of jute more for home use. The surplus is sold in *hats*. We cannot say what the yield of a beegah is; we do not weigh the fibre. We grow jute on home-stead land. It does not grow on low-land. Low-land does not suit jute in as much as it is impregnated with salt; we manure the land destined for jute with cow-dung. Jute would not thrive unless the land is manured. Those who have large quantities of high land, change the soil almost annually; but as a rule such lands in the Sunderbun Grants are in very small quantities, consequently we manure the same plot of ground and raise the jute crop thereon from year to year. We grow *sursoo* on jute land in the winter. In January *sursoo* is removed, and we plough the land 4 or 5 times, and then sow the jute seeds after a shower of rain in Ashadha. About 2½ seers of jute seeds suffice for a beegah of land. We leave seeds upon the field. We do not buy them. We weed the jute field when the plants are half a cubit high. If the plants grow too closely, we pull up weak plants and thereby thin the field. We cut the jute in Bhadra and Aswina in fruits. The fibre then gives sufficient strength. If the jute is cut in flower, the color of the fibre becomes nice, but it becomes weak. After cutting, we stack the plants in the fields, and cover them with grass; this is done for 3 days for the purpose of getting rid of the leaves. The plants

are not kept standing on the ground. After 3 days we tie the same in bundles and steep the same in *theels* and *kals*, and place upon them pieces of wood or clods of earth for sinking them below the surface of water. The putrefaction comes on in 10 to 12 days or sooner; the fibre is then shaken off in the water from the root. The fibre is then washed in the very water in which it has been steeped, and dried for 2 or 3 days, and tied up in hanks. This season's fibre has not yet appeared in market. Old jute is sold at 4 pice and 5 pice a seer. The *furreahs* who buy our jute, pay Rs. 2-4 and 2-8 per maund. The *furreahs* take their purchase to Calcutta. This year the cultivation of *kosta* is less by nearly half. Last year's market was low, and the growers suffered loss, hence the reduction in cultivation this year. Last season, jute was sold at Rs. 1-12 and 2-4 the maund, and in the season previous, it fetched Rs. 2-12 to 3-8. In commerce, the jute grown here is called *desi pat*. We sell jute fibre in the Bhubanipore *hdt*. The *furreahs* also come to our houses and buy jute. We do not grow jute under advances. We have not got a separate rate for jute land. Where wosteeper jute, the water is not very saltish, but it is not drinkable. We do not grow *sunu* or *mesta*.

No. 20.—DERUSTOLLAH SHEIK, DERAS SHEIK AND DAEM MOLLAH (of Mooregahatollah), CHAND MOLLAH (of Nulmoory), BONOMALLY MOLLAH (of Ghotuck-pocker), AND JOHIP MOLLAH (of Nungul-banki), 24 Pergunnahs, 28th August 1873.

We have been cultivating jute from our boyhood. We grow *bangi* and *amunia pit*; the former is grown in larger quantities than the latter. The stalks and leaves of *bangi* are of light green color, and the seed-pods long; those of *amunia* of the same color, the seed-pods being roundish. New jute has not yet been prepared; jute plants are generally cut in flowers; the fibre of such plants is of a finer color than those cut in seeds; as a rule jute land is not manured with cow-dung, but generally fresh earth dug out of old ponds and ditches, is put upon it. If fresh earth is put in the way above described, the same pieces of land will grow jute from year to year as long as one likes, but unless fresh earth is put on the field, the second year's crop is poorer than that of the first, and annually new sites are selected for the growth of jute. We grow jute on high *doas* and *matial* land; the yield of a beegah of land is not more than 3 or 4 maunds. Old jute is now selling at Rs. 2 and 2-2 the maund; jute is sold here by the seer of 80 tolahs. Sometimes jute is sold in the *kals*, and other times the *furreahs* come from Rajarhat near Dum-Dum, and other places to our houses and make the purchase. *Sursoo* and *mussoori kulai* are grown upon lands destined for jute in winter; these crops are taken off the field in Falguna; the land is then ploughed 10 or 12 times, and the seeds sown in Vaisakha and Jyaishtha; after a shower of rain when the plants are about half a cubit high, a weeding of the grass takes place; if the plants grow too thickly, we pull up some and cut the

plants in the latter part of Bhadra and in all Aswina. Some steep the bundles at once, some keep them on the ground for 2 or 4 days in order to get rid of the leaves, when they are tied in bundles and steeped in tanks; after 10 to 15 days' steeping, we separate the fibre from the thick end by shaking the stems in the water. The increased cultivation of jute has been going on from the last 5 or 7 years. Last year's cultivation was the largest and this season's cultivation is less by six-annas or more. Last year's price was not paying, hence the reduced cultivation this year. We work with our own ploughs, and work ourselves on the field. In Calcutta the jute sold by us is called *desi*. We produce good jute. Last year we sold jute at Rs. 2, 2-4, and 1-2 the maund. In the year before last, jute fetched Rs. 3-8 and 3-12 the maund. *Furreeks* take our jute to Wooltadangah, Rajarhat and Belgatchia. We take advances from the *furreeks* and grow jute. We contract to sell jute at the market price, and to give 5 seers over and in excess of a maund. We have to deliver jute within a certain time, and if we fail to fulfil our contracts, we pay within a given time 4 annas to the rupee by way of interest. We receive advances from the *furreeks* in the month of Bhadra; ryots who take advances cannot sell jute to others. The advance of last year was from Rs. 2 to 30 in each case. This year the advancing has not yet commenced. We tie up jute in hanks of 2½ seers each. It costs about Rs. 8 to raise jute crop on a beegah of land, including the expenses of the preparation of the fibre. We do not grow *mesta pidi*. Low-lands do not grow jute.

No. 21.—MR. JAMES GORDON (*of Gouripore*),—
24-Pergunnahs, 16th October 1873.

I am Superintendent of the Gouripore Jute Mills. I have been in Bengal for the last ten years. In the years 1870, 1871 and 1872 I grew jute on account of the Gouripore Company both on *chur* and high lands, and the high land crop turned out to be much superior to that raised on the *chur* land in strength, length, and color of fibre. The outturn per beegah on the high land was 8 maunds in the first two years, and 7 maunds on the third year; that on the *chur* land was about 7 maunds regularly. The *chur* used to be flooded, annually, and I did not put any manure on it. The high land had been manured two years before with cow-dung for sugarcane crop. I cut the plants on high lands when they were in flower, and those on *chur* land when they were running to seed. The *chur* land jute was harsh and had long and hard roots. After cutting I laid the plants with tops and leaves in the field for about two days. In observing this process I had no object, but I simply followed the practice observed in this part of the country and in Scotland in case of flax. Afterwards I caused the stalks to be steeped in pools and excavations, *i.e.*, stagnant water, and covered them with sods to keep them beneath the surface of the water. They were steeped for ten days, and then the fibre was separated by jerks in the water. The fibre was cleaned in the same water in which the stalks had been steeped and

dried for about three days. The fibre was then ready. I grew the long-podded jute. It was the white-stalked variety. I used the fibre in our own mills. The soil of the high land was sandy clay called in Bengalee *doas*. I did not think of steeping jute in the river water, as I was told that running water hardly rots the bark, and if it does, it takes a long time. In my opinion jute deteriorates, firstly, by being left standing too long in the field; secondly, for want of sufficient labor to manipulate jute after being cut; and thirdly, in dry years, such as last for instance, from want of sufficient water in which to steep the plant. Manuring greatly improves jute. Jute should not be grown on the same land for several years consecutively. It is an exhausting crop, and the land should be allowed to be fallow for a certain time. In seasons when there is a scarcity of water, people generally steep too many bundles in the same pool, a circumstance which leads to the loss of color. The expense of growing jute, and preparing a maund of fibre therefrom as incurred by me was Rs. 2-1-3 last year, when the price of jute was Rs. 2 to 3 per maund. The jute I prepared was fully worth Rs. 3 the maund. I paid Rs. 10 for a maund of seed which I got from the neighbouring cultivators. In these mills we use Serajunge and Naraingunge jute, and in the winter a little of *desi* jute. I think that jute is not as a rule deteriorating in quality. I admit that a large portion of very inferior jute comes to the market, but that is owing to want of labor, insufficient water, and other local causes. Jute will thrive well in moist ground and in moist climate. The native name of jute grown here is *Luckhipore pidi*, and some call it *amunia*. This year's cultivation has been reduced in this part of the country by 25 per cent. if not more. My inquiries lead me to believe that the cultivators suffered a loss last year, and I do not think jute will pay unless sold at least at Rs. 3 per maund. We pay 15 pice to 4 annas for unskilled labor.

No. 22.—ALIMAMUD SHAIK (*of Woorjulerdanga*),—
Rungpore, 28th May 1873.

I am an under-tenant, holding under a middleman some 30 beegahs of land, for which I pay an annual rental of Rs. 30. Last year I grew jute on two beegahs, and I got 17 maunds of the *dhola* variety, which, with the exception of five seers I kept for home use, I have sold to *beparies* at 12 annas and 8 annas the maund. I sold in the months of Aswina and Kartika last. I do not grow jute under advances. I sold to *beparies* living in and about the place. I have been growing jute from a long time, but formerly I grew it for home consumption. Jute for sale has been grown for the last 30 or 35 years. Year before last I grew jute on a beegah and half, and I got ten or twelve maunds, which I sold at Rs. 2-12 to Rs. 3 per maund. The cultivation has been on the increase year by year. Owing to the high prices last year, there was extensive cultivation. This year I have grown on a beegah and half, but the drought has damaged all the young plants. This year, in this part of Rungpore, the

cultivation of jute has been six annas less than that of the last year. I grow jute on high land, which I have to manure with cow-dung. It is *doas* land, being an admixture of sand and clay. In this country two kinds of jute are grown. One kind and that which is largely grown is the *dhola pat*, and the other is the *patlai* or *balatee pat*. The *dhola* plant attains a height of six and seven cubits; the leaves are light green; the flowers small and yellow, and seed-pods globular; the seeds being of a reddish color. The *patlai* plants grow as high as *dhola*: the plants have a reddish hue, and their leaves red veins. Some of the plants of this variety of jute are also greenish. The seed-pods of *patlai* are elongated, and the *patlai* seeds themselves have a dark green color. The jute grown here is called *kamarjani* jute, and is sent partly to Serajunge and partly to Calcutta. There are a class of men called *paikars* who also buy from us, and then sell to the *beparies* who ship to Calcutta or Serajunge. We do not sell jute at any market; the *paikars* come to our houses and buy it. Jute is sent by country boats and steamers. Steamers touch at Kaligunge fortnightly; the river below Kaligunge is navigable throughout the year. We do not, as a rule, grow jute on the same soil consecutively for two years in as much as it weakens the soil a good deal. Generally *aus* paddy is rotated with jute. If no other land be available, we fall back upon the old jute land. If we can manage to cut jute in the month of Bhadra, then either mustard or *kulai* is grown upon jute land. But not if jute is reaped in Aswina, for in that case we have no time to prepare the land for these winter crops. The *kulai* is harvested in our country in the month of Kartika, and in Aughran following, the ploughing commences. It requires 10 or 12 ploughings to prepare a beegah of land for jute. If the land is moist, a *moi* or ladder is passed on it two days after ploughing in order to pulverize the earth; the *moi* is passed on as often as these are ploughings. If the land is dry, the ladder is passed on the same day. The seeds are sown broadcast in the month of Chaitra or Vaisakha after a shower. About a seer of seeds are enough for a beegah of land. In two days they germinate, and when two or three leaves appear we weed out the grass. Some 15 or 20 days after, another weeding takes place, and if necessary, the grass is weeded a third time. Sometimes when the young plants are six inches high, the harrow is passed on the land for the purpose of killing the grass. When the plants are a foot or a foot and a-half high, the stunted plants are removed. Jute is cut in the months of Sravana, Bhadra, Aswina, and Kartika, according to the time in which the seeds have been sown. We cut the plants when one or two seed-pods appear. Cutting too early weakens the fibre; cutting too late makes it tough. After reaping, the plants are steeped in *heel* water. The steeping is complete in 15 to 20 days. Under-steeping hardens the fibre and over-steeping weakens and discolors it. The fibre is separated by jerks in the water from the root end, washed in clean water, and dried for two or three days. It is then tied up in hanks and sold. The weight by which we sell jute is the seer

of 84 tolahs and 10 annas. I know *mesla*, but it is not grown here. *Sunn* is grown by fishermen for nets. Virgin *chur* land grows the finest jute, and requires no manuring. It is customary to keep a few well-grown plants for seed and cut them in Aughran and even in Pous. The seed-pods are then separated and dried for four or five days and stored up. We do not steep the seeds in water at the time of sowing or at any time. Alternate rain and sunshine favor the growth of jute. Too much of either stunts the growth of the plants which run to seed untimely. The *woochinga* insect burrows at the root of young plants and destroys them. The *beechas* attack the leaves and damage the plants a good deal. Drought brings on these insects. The black specks on the fibre are owing to clods of earth placed upon the plants when steeping in water. Accumulation of water in the jute field leads to the fibre being rooty. I work myself on my fields; I use my own ploughs. The expenses may be estimated as follows:—

	Rs.	A.	P.
Ploughing and laddering, &c. ..	7	0	0
Weeding, including pulling up of weak plants ..	2	8	0
Cutting and steeping ..	1	8	0
Separating the fibre ..	1	8	0
Drying fibre ..	0	8	0
Rent per beegah ..	3	0	0
Total ..	16	0	0

The rent of jute land is Rs. 3 the beegah. Manure is thrown in Magha, Falguna, and Chaitra. The yield per beegah of good land is 8 to 10 maunds; no one makes any gunny for sale here. Recently people have been reducing their *aus* rice cultivation to grow jute. About half the produce of last season is in the hands of *mahajuns* and *paikars*. Seeds are sold, but not as a rule.

No. 23.—MOOCHI RAM DASS (of Kumbhapore),—
Rangpore, 28th May 1873.

I have been a broker for the last twenty years at Kaligunge. I buy about 10,000 maunds of jute a year, and send it to Serajunge for sale. I generally give advances to *paikars* and growers, and charge interest to the growers at the rate of six pie a rupee per month. I do not tie down the ryot to any fixed rate when I make the advance. When the fibre is brought to me, I fix a rate and charge one anna per maund for the advance. Both the ryots and *paikars* bring their jute to me, sometimes in boats and at other times on pack-bullocks. I paid last year Re. 1 to Re. 1-12, and the year before Re. 1 to Rs. 2-12 the maund. There was a sale of about 75,000 maunds here last season. Thansingpore, Gooptorhat, Goddberhat, Nuldunga, Lackpore, Dairapote, Goomarpore, &c., supply this mart with jute. The various *chur* lands on the other bank of the Brahmaputra also send in jute to this market. I send all my jute by country boats. I believe jute to be deteriorating owing to the growers using the same land year after year for

the jute cultivation, and thereby exhausting the soil. Neither in length, color, and flexibility can the fibre of the present day vie with that of former years, and this deterioration is also attributable to the want of proper manuring of the soil. I charge the parties I buy jute for one anna commission. I employ monthly servants at the rate of from Rs. 4 to 5 *per mensem* to go about and make purchases on my account from different *hats*, as also from the growers. Sometimes I drum the fibre, and sometimes I send it off loose. I pay Rs. 3-2 per 100 drums exclusive, and Rs. 3-8 inclusive of food to the people who make them. I have my own boats for exporting jute, and each boat requires six rowers and one *manjee*. I pay the *manjee* Rs. 5 and the men Rs. 4 per month. The boat holds about 350 maunds and costs about Rs. 50.

This year there will be about half of last year's crop, and I believe it will be rather inferior owing to the want of rain. The plants about this quarter are drooping and withering. I send my jute to Serajunge. I buy both *aus* and *aman* jute, the former has shorter fibre and not so good as *aman*. The *joli* or low-land crop is *aus*, the high-land is *aman*. I see two kinds of seeds here. From the reddish kind *dhola*, and from the greenish variety *pallai* jute is produced; the seed-pods of the latter are long. I am not aware of any *pallai* fibre being brought here for sale. I work with the capital of the *mahajuns* living at Serajunge, and buy jute for them, and get for my commission one anna to the maund, paid by the sellers; the buyer pays for the making up of drums. The cost of sending 100 maunds of jute to Serajunge is four annas per maund. I never send jute to Calcutta. Besides my commission of an anna the *mahajuns* in favorable seasons give me a rupee for every 100 or 200 maunds. I buy for Prem Chund Rutton Chund, and for several petty firms. I also purchase on account of the itinerant traders who come here from Serajunge, Belcoolhee, and occasionally from Dacca in the months of Magha and Falguna. The itinerant traders too give me a like reward. I take from the growers who receive advances from one to two seers of fibre per maund. I make the advance to the growers in Ashádh. I also advance money to the *paikars* in and out of season. If the *mahajun* comes to buy, I take money from him, and make an advance to the *paikars*, who go about and bring jute. The weight on the east side of the Gojarea River is 84 tolahs and 10 annas; that on the west side is 87 tolahs. I buy and sell by the former weight. About one-fourth of last season's produce is yet unsold. The market is gradually going down.

No. 24.—PROTAUB MŪL (of Chilmarī),—Rungpore, 30th May 1873.

I am a trader in jute and piece-goods at Chilmarī. I have been doing this business for the last seven years.

Chilmarī is on the west side of the Brahmaputra, and is navigable throughout the year. Formerly we had the jute trade in this part, but

the increase has been marked during the last three or four years. From what I know myself, and from what I have heard, I can state that the trade has been carried on here for upwards of twenty years. I buy and sell some 1,500 to 2,000 maunds of jute. Last year, however, I bought somewhere about 3,000 maunds of it. The fibre grown about here, and what we buy, is of medium quality, and is not so good as the produce of Kaukripara and other *churs*. Generally I purchase white and rarely reddish fibre, the name of which is *meela*. In 1278 B.S., I sent some jute direct to Calcutta for sale, but it did not prove profitable; since then I have been sending to Serajunge. I pay a rupee brokerage for every 100 rupees' worth of jute; I have also to pay Rs. 4 for the making up of 100 drums, and eight annas for *dingwallahs* of both the buyers' and sellers' brokers for every 100 maunds, and four annas rent for every 100 maunds of jute sold. Last season I paid Rs. 2 to 3-6 the maund and sold it at Rs. 2 to 4. I sell the jute unassorted. The brokers' firm at Serajunge sends boats to this place and takes away the jute. It cost about Rs. 18 on account of boat-hire for sending 100 maunds of jute to Serajunge, and Rs. 3 to 4 hire of pack-bullocks for bringing it from our place of business, which is about two miles distant from the river. I buy jute in small quantities from the growers at the Chilmarī *hat*, which is held twice a week, and from the *paikars*, who bring it to me. I advance money to the growers and to the *paikars* in the month of Ashádh. I also make cash purchases. In some instances the prices are fixed at the time the money is advanced. In others the condition is that the party receiving the advance will sell to me at two annas below the prevailing market rate. No deed is executed by these men; generally they fulfil their contract. During my experience I have never had occasion to have recourse to law. Small quantities of raw fibre come to the market in the latter part of Ashádh. The import increases in Srāvana, and is very brisk in Bhādra. Owing to the increase of price in the season before last, the people about here grew more jute than in other years. The market, however, fell, and, as a consequence, the ryots have reduced the cultivation by six annas. In the season before last, good jute sold for Rs. 3-8, and in the previous season up to Rs. 4-8 and 5 the maund. I estimate the stock yet unsold at about two annas. Some 40,000 to 50,000 maunds of jute are annually bought and sold at Chilmarī. A large number of itinerant traders also come from Serajunge and buy from the growers and *paikars*. As far as this place is concerned I have observed a gradual deterioration of fibre; what I mean to say is, that of late years more inferior and medium jute has come to the market than the superior kind. We don't buy here through brokers, but the itinerant traders do. These men pay the broker one anna for each maund, the seller has to pay nothing. The weight by which jute is purchased here is the seer of 87 tolahs. At Serajunge the sales are made by the seer of 84 tolahs and 10 annas. As a rule *churoo* jute does not come to Chilmarī. Villages lying within a radius of 10 miles send their jute here for sale.

During the rains, jute is brought here in small open *dinias*, at other times on pack-bullocks. People generally bring jute in hanks of five seers each. As a rule the growers allow one seer over and above one maund, this is called *dholla* (brokerage); but when the fibre is somewhat wet another half seer is allowed. I buy and sell on my own account. Each *paikar* takes an advance from Rs. 10 to 25 at a time; I take no advance from anybody. There was an English firm here belonging to Messrs. F. Wilson & Co., who bought some 60,000 or 70,000 maunds of fibre and sent it by steamer; but there is none now. In the season before last I sent some jute by steamer to Calcutta, and it cost me 18 annas per maund. This year, however, the freight has been reduced to six annas. The *aratdari* charge in Calcutta is one rupee for every 100 rupees' worth of jute. Gunny-bags are not made here. *Churroa pat* is sold largely at Kankripara, and bought up by the itinerant traders. *Teeta* jute scarcely comes here, but the English firm last year made large purchases of that jute.

No. 25.—BAJAROO BEPARI (of *Sheikherhat*),—Rungpore, 31st May 1873.

I am an agricultural ryot holding some 12 beegahs of land, of which I grew jute on 2 beegahs and got 12 maunds of fibre, which I have sold at the rate of Rs. 2 per maund. I have sold to the *paikars* who come to our houses to purchase it. I grew *dhola kosta*, the fibre was 6 cubits long. There are two kinds of jute, viz., *aus* and *hemunto*; the former is early, and the latter late. The red jute is also grown here. It is called *mesta*. I grew both kinds. *Aus* was sown in Chaitra, and cut in Ashādha and Śrāvana; *hemunto* sown in Vaiśākha and cut in Bhādra and Āswina. *Aus* is grown on low lands upon which common paddy grows, and *hemunto* on land neither very high nor very low. The late or *hemunto* fibre is better, i.e. it has better grains than the *aus*. The *aus* is grown and cut early, in order to escape floods and accumulation of water. Jute grows on both high and low lands. I own 16 heads of cattle, and the cow-dung obtained from my cow-house is used in manuring two beegahs of jute land. The ground is manured in January (Magha); we store up cow-dung. The stalk of the *dhola pat* is greenish, and the leaves light green; the seed-pods are round, and the seeds deep brown. I cannot describe the *mesta*. The yield of a beegah of rich soil is eight to ten maunds, and that of ordinary land four to six maunds. I do not grow jute under advances. In our part of the village, the people do not take any advances, but when the plants are on the ground, some people take money from the *paikars*. In such cases, the seller sells at one anna and two annas less than the market rate. I steep jute in *bheel* water, and cover the stalks with the tops of the plants previously cut off. Color depends upon the quality of water used; dirty water produces muddy color. Over-steeping weakens the fibre; under-steeping makes it woody. Fertile soil grows fibre with

good grain; and weak and used-up land produce weak fibre. The black specks on the fibre, I alluded to, are caused by the plants coming in contact with each other during a storm. Under-steeping also begets black specks. The *runners* are caused by certain parts of the bundle not sinking well and getting exposed to the action of the sun. We steep plants from 15 to 20 days. I commence cutting the plants when they are just commencing to get into seed. The fibre then looks nice, but is light in weight. Jute on low lands must be cut before the inundation, whatever state it may be in. The plants are steeped as soon as cut. If these be kept in the field and exposed to the sun, the fibre becomes coarse. After rotting, the fibre is taken out from the root-end by repeated jerks in the water; the thick end being broken one cubit above the end. Jute does not grow more than two years on one and the same land. It is rotated with *aus* paddy and rape-seed, which we grow for two and three years, and then we grow jute again there. We do not grow anything on the low *joli* land; after the removal of jute, we sometimes sow mustard on jute land in cold weather. *Matial* land grows the best jute which is brought from Kankripara. *Matial* is *poli* land (mixture of sand and clay). I do not sell jute to itinerant traders. Last year people grew jute largely, this year the cultivation will be eight-annas less. The fibre is getting inferior every year, the causes of this deterioration are insufficient rainfall and weakness of the soil. I am not aware of any instance in which jute has been abandoned in the field.

No. 26.—SHEIK SOOA (of *Bagoah*),—Rungpore, 5th June 1873.

I am an under-tenant and hold 40 beegahs of *chur* land at an annual jumma of Rs. 27. I have been growing jute for the last 10 years. Last year I cultivated two beegahs with white jute, and got 10 maunds of fibre which I have sold to *paikars* at Rs. 2 per maund of 87 tolahs to the seer, which is the normal weight in this place. In the season before last I sold jute grown by me at Rs. 3 per maund. Jute is not grown under advances. The *paikars* come to our houses, inspect the fibre, and strike the bargain. We do not allow for *dholla* or brokerage. This year I have sown two beegahs. The plants are seven or eight inches high, but their growth has been retarded by the drought. In the early part of Vaiśākha, after a shower of rain, I sowed two beegahs of land with about three seers of jute-seeds, the seeds being sown broadcast. There have been hailstorms in our part of the country, but they have not done much harm. I and my neighbours manure the land for jute with cow-dung, ashes, and oil-cake. Cow-dung is the best manure. People who have not cattle enough buy oil-cake. I cannot say how much cow-dung suffices for a beegah of land. Cow-dung is not bought and sold. People buy one or two rupees worth of oil-cake and put it on a beegah. We sow jute on *chur* lands. The *chur* I lease has been

formed for about 40 years. A *chur* formed about 10 years will grow a jute crop. There is no special rate of rent for jute land. The land upon which I grow jute is not inundated annually. It has not been so for the last four or five years. It is good for the fertility of the land if it be annually flooded. I cut the jute plant in the month of Kartika, just when it is running to seed. The stalks and leaves of the jute I grow are light green and the seed-pods globular. I have not seen any other kind of jute but *mesta*. One plot of ground is not sown with jute for two years running, for it weakens the soil as regards its own growth, but it grows *aus* paddy and *kulai* in the following year. If the soil be good *doas*, and well manured, then a beegah may yield from five to six maunds of fibre—not more. We grow medium jute. We steep the jute at once after cutting, preferring the water of a *khal* or *bheel*. A large sheet of good water ensures a good white color. Plants that are stunted do not rot well, and runners are to be seen in the fibre. The stalks are steeped for 15 to 20 and even 30 days. The fibre is separated from the reed by jerking in the water. It is then washed in the same water and dried for two days on a bamboo scaffolding. Jute cultivation has been carried on here for the last seven or eight years. The *paikars* come here annually to buy jute and send it down in country boats to Serajgunge, where they sell it to *mahajuns*. Sometimes a needy ryot takes a quantity of jute to the market, sells it there, and with the proceeds of the sale buys oil, salt, &c. The cultivation of jute in our part of the village has not been lessened this year. There is no Chaitra or early sowing here. Some people grow mustard on land destined for jute. Some years the fibre turns out good, some years inferior; its quality depending upon the weather and the care bestowed in preparation. Alternate rain and sunshine favor the growth of jute. In this part of the country the Kankripara jute is the best; why it turns out to be so is more than we here can tell. As a rule advances are not taken, but some ryots pressed for money take it. Those who take advances fix the price at which jute has to be delivered to the advancing party. No advances have been given and received this year. The *mahajuns* say they have in their hands last year's jute still unsold. How much remains in their hands is more than I can tell. A few growers have not sold their crops entirely.

No. 27.—PANCHA SHRIK (of Digolkande),—Rungpore, 7th June 1873.

I hold 124 beegahs of land at an annual jumma of Rs. 140. I cultivate 30 beegahs myself and sublet the remainder. Last season I raised on 4 beegahs 20 maunds of jute which I sold to the *mahajuns* of Chilmar at Rs. 2 the maund. I do not grow jute under advances. This year, as jute cultivation generally has been reduced by six-annas, I have cultivated 3 beegahs only. The drought of Vaisākha and Jyais̥tha has dried up a good many plants. There was drought for 40 days, and we have rain last three days only. I grow white jute, called *dhola kosta*, and red jute,

called *mesta*, and also *tosha* here. The stalks and leaves of the white jute are light green, and the seed-pods globular, while the stalks of the red jute as well as the veins of the leaves are red, and the seed-pods elongated. The seeds of the *mesta* or *tosha* are blackish, and of the *dhola pat* reddish. The *tosha* has longer fibre than the *dhola pat*. The fibre of the latter is separated by jerks in the water about a cubit from the thick or root-end; and that of the former in the same way, and at about the same length from the thin or top-end. There are knots in the red jute plants which prevent the separation of the fibre from the root-end. I grow jute on high *aus* land, composed of sand and clay, and manure with cow-dung and ashes. I cannot say what quantity of cow-dung is used; but I estimate it to be about 30 maunds. Cow-dung is, in our part of the district, bought and sold. It is sold for about Rs. 2 the maund. In the month of Paiguna and Chaitra before the two last ploughings, the manure is thrown in basketfuls here and there, and after two or four days the ground is ploughed up and passed under the ladder. The rule is to cut the plant when in flower. The fibre then turns out to be very fine and glossy. It is well to steep the plants soon after cutting; if left for two or three days in the field, the color of the fibre becomes reddish. Both white and red jute seeds are sown either in Chaitra or Vaisākha, and the plants cut in Bhadra and Aswina, also in Srāvana, but in very small quantities. The plants are steeped in deep water which has no current; stagnant water rotting them sooner than still river water. Jute cultivation has been carried on here for the last 25 years or so. I do not grow jute on the same land for two years running. I let it rest from jute for three or four years. Jute land produces good *aus* paddy in the year, after a jute crop has been raised. The fibre is sold by the weight of 87 tolahs to the seer. The jute from plants cut when in seed, weighs lighter than the fibre from plants cut in flower. It costs—

	Rs.	A.	P.
Fifteen ploughs	...	5	14 0
Weeding, 15 men	...	2	13 0
Two harrowings	...	0	6 0
Cutting, 8 men	...	1	8 0
Separating	...	0	15 0
Drying and tying up, 2 men	...	0	6 0
Seeds, 2 seers	...	0	4 0
Rent	...	1	0 0
Total	...	13	2 0

We ourselves work on the field. Ploughs as a rule are not let on hire. The rent of paddy land is 10 annas, and of jute land Re. 1. Eighty *kats* (each *kat* of 19½ inches) make a beegah in our pergunnah.

No. 28.—HURRY NARAIN DASS (of Roodrapore Kankina),—Rungpore, 18th June 1873.

I am a cultivator, holding 1½ *peesh* of land, upon which I raise *dhan*, jute and tobacco. Last season I grew jute on 1½ *poah* done of land. This year as jute cultivation has been lessened by about

eight-annas in our part of the country, in consequence of the falling off in prices, I have reduced my own cultivation to one *poah*. Last year the *shoopocka* insect, which is very destructive and appears periodically, irrespective of rain or drought, attacked the plants in Srāvana, ate up the tops and destroyed an entire field of jute. I consequently got 1½ maund of fibre, which I sold for 1-8 the maund. I grew *dhola pāt* (white jute), the stalks and leaves of which are light green, and the seed-pods globular. People in this part grow also red jute, the stalks of which are red and the seed-pods globular. I do not know what is *parbutea pāt*, and I have not noticed elongated seed-pods in any jute plant. I grow jute on high *bari* lands, which I manure with cow-dung. Some people use oil-cake also. The soil is an admixture of sand and clay.

In the month of Kartika, we commence ploughing land for jute. After tillage in that month, we grow tobacco on it. In the months of Magha and Falguna, we reap the tobacco harvest. In the Chaitra following we manure the land and plough it seven or eight times. Some people, who have no ploughs, turn up the earth with *kodalies* and then sow jute. It requires turning up in this way 12 or 14 times. In the month of Vaisākha on a clear, sunny day, after a shower of rain, the seeds are thrown broadcast. One seer of seeds suffices for a *dona* of land. In ploughed lands the seeds are covered with a thin crust of earth by the ladder being drawn over them. Where the *kodalie* is used, the seeds are covered with earth by hand. When not covered, the seeds dry up and do not germinate. The young shoots are above the ground in three days.

The grass is generally weeded out twice, but once only, where the grower cannot afford the cost. After 20 or 25 days from the first weeding, when the plants are about a foot high, the field is weeded again and thinned. If this process is neglected, the stalks do not become pulpy. The plants are then cut in Bhādra and Āswina, when in flower, which is the proper time for cutting. If plants in seed are cut, the fibre becomes coarse and woody. The plants are cut near the ground with a sickle, and the tops are lopped off. The green stalks are kept standing on the field for two days to let the juice dry up, when the stalks can be more speedily rotted. Plants so treated yield, when dressed, a good white fibre. But the process of rotting becomes difficult if the stalks are kept in the field for three or four days. After this partial drying, the stalks are steeped in waist-deep *bheel* water. We do not steep plants in the Teesta, because the process of rotting is delayed, and it is difficult to keep the bundles into which the stalks are tied in one place in a running stream. After 15 or 20 days' steeping, the fibre is separated by breaking the plant a cubit above the root, and by repeatedly jerking the stalks in water. The fibre is then washed in the same water, and, after the water has been wrung out of it, is dried for three days, after which it is tied up in hanks of five seers each. The fibre is sold either at the *hātis* or at the grower's house to *paikars*, who again dispose of it to the *goladars*.

The jute grown here is called *Kankina pāt*, and is taken to the mart at Serajgrunge by the *mahajans*. Jute is not grown here under advances. It is sold by the weight of 80 tolahs to the seer. The jute we prepare is good, i.e., of a white color, and about six or seven cubits long. But if the stalks are steeped in dirty water, the color becomes either muddy or reddish. Year before last we sold jute at Rs. 2-4 and 2-6 the maund. Last year's crop has not been entirely sold for want of purchasers; about six-annas yet remain on hand. Jute is now selling at Rs. 1-6 and 1-8 the maund; we sell jute at *Kankina hāt* which is held on every Tuesday and Friday. Under-steeping leaves much bark on the fibre, and over-steeping impairs its strength and color. A *dona* of land well manured yields from 2 to 2½ maunds of fibre.

I keep well grown plants for seed, and cut them in the month of Aughran. At the beginning of the season there was a drought, and the plants were not thriving; but the recent rains have changed the prospects of the crop, the plant is now about five feet high. I grow jute year after year on one and the same land; but I manure it well. Those who have several plots of good land select a new field every year.

Alternate rain and sunshine are essential to the growth of the jute plants; and while drought stunts them, excessive rain prevents them from thriving, and gives a red color to the fibre prepared from them.

Jute is carried on the head of men and in *bangies*. It is sent down to Serajgrunge in country boats by the Teesta and Brahmaputra. Gunny is not manufactured here.

No. 29.—SHEIK AMANUTHOOLIA (of Kankina),—
Rungpore, 18th June 1873.

I am the sirdar (head) of the peons employed by the zemindar of Kankina. I hold tenures on a jumma of Rs. 1,600 per annum, mostly underlet. I retain only about one and a-half *beesh* of land, on eight *donas* of which I grow jute. Last season I raised on five *donas* ten maunds of fibre, which I have not sold. I also deal in jute. I purchased 600 maunds of the Teesta jute about the Doorga Poojah time last season at Rs. 3 and 3-4 the maund, and sent to Calcutta in country boats by the Teesta and Brahmaputra as far as Goalundo and thence by rail. In Kartika and Aughran, when the market fell, this kind of jute was sold for Rs. 2. The jute I sent down was sold in Calcutta for Rs. 2-3 and 2-6 the maund of 80 tolahs to the

	Rs.	A.	P.	seer; although
* Fibre	3	0	0	each maund, in-
Boat to Goalundo	0	5	0	cluding the ex-
Hallway fire to Calcutta	0	5	6	pense of transport
Coolie and cart-hire	0	1	6	to the Presidency,
(a) Godown-hire in Calcutta	0	0	11	cost me about
(a) Arstidari and brokerage	0	0	5	Rs. 3-12*. Jute
Total	3	13	4	sent to Calcutta

is drummed here at a cost of Rs. 4-8 for 200

(a) These charges are made by the Marwarree *arstidars*; Bengalee firms charge two annas per maund sold. Both Marwarree and Bengalee firms take godown-hire.

drums of *kutcha* two maunds more or less each. It is sent to Serajunge both in drums as well as in hanks of from five to five half seers each, which cost five annas for 100 hanks. The maund is 40 seers, of 80 tolahs to the seer. It costs Rs. 4 to send 100 maunds of fibre to Serajunge, where I sell by the seer of 84 tolahs and ten annas. The same rates prevail at Serajunge as at Calcutta, only we have to give some jute over and above what is paid for at the former place.

The jute I grow on my own land has been kept for home use.

We all grow here both white and red stalked jute, the seed-pods of which are globular. The fibre got from the latter variety is reddish, and is not sold at a high price. The red jute is called *lal pat*. The fibre of the white jute is fine and glossy, and commands a high price in the market. It costs about Rs. 6 to grow on one *dona* of land including rent as per following detail :—

	Rs.	A.	P.
Rent	2	0	0
Sixteen ploughs for four days, including sowing ...	1	0	0
Two weedings, including plucking out bad plants, four men ...	1	0	0
Cutting, four men ...	1	0	0
Separating, drying, &c. ...	1	4	0
Total ...	6	4	0

The yield of a *dona* of good land here is two and a half maunds, or two maunds and 30 seers.

Doas bari or home-stead lands are best suited to the growth of jute. Land is manured with cow-dung and sometimes with oil-cake. There is no certainty as to the quantity of cow-dung used; but about two to four seers of oil-cake costing 1 rupee per *kutcha* maund are used on a *dona*. Cow-dung is not bought and sold. In Kartika or Aughran the jute-land is generally manured with cow-dung and ploughed up. Oil-cake is thrown before the seeds are sown in Chaitra or Vaisakha. Jute is cut in Sravana and Bhadra partly in power and partly in seed. I do not cultivate with my own hands. *Paikars* bring jute to Kankina in carts and boats from the villages of Habibonda, Baora, Julpigoree, Gontawari, Debikhoon, Fukeergunge, Shitae, Neckligunge, and sell it to the *mahajans* who send it to Calcutta or Serajunge. Steamers do not come here. The soil on the banks of the Teesta is more sandy than clayey. I cannot say why people grow red jute when its fibre does not turn out to be good and white. Jute is steeped in tanks and *bheels* and occasionally in still river water. Jute cultivation, which was on the increase for the last three or four years, will be six annas less this year owing to the low prices of last year. The fibre has, in my opinion, been recently deteriorating because people in the hurry of coming to the market cut the plant too early, and before it is quite dried tie it up in hanks,—the result has been that the fibre is weak and the color bad.

Kankina jute is neither very good nor bad, but of medium quality. In the season before last I sold jute in Calcutta up to Rs. 5 the maund.

Goberdhone jute comes to this place for sale. The system of advances to the growers or *paikars* is unknown, nor is brokerage allowed in dealings here. The Kankina *mahajans* buy and sell some sixty or seventy thousand maunds of jute yearly; last year the cultivation of jute in our part was the largest.

Jute land, as a rule, is ploughed, but small cultivators who cannot afford the cost of a plough use the *kodalia*. Jute leaves (both white and red) are eaten as pot-herbs, and sold in the market.

Under-steeping makes the fibre woody.

No. 30.—GODADHUR SHAHA, HUREENATH SHAHA, AND RAM CHUNDER SHAHA (of Kankina),—Rungpore, 18th June 1873.

We have been buying and selling jute for the last five to seven years. Jute cultivation and trade have been on the increase for the last seven years or so, and before the last season the price of a maund of *Teesta* jute ranged from Rs. 3 to 4. Last season we bought for Rs. 2, Rs. 2-4, Rs. 2-8 and Rs. 2-12, and sold it in Calcutta at a loss of Re. 1 and Re. 1-4 the maund. We send jute to Calcutta, sometimes in country boats of 700 to 1,200 maunds burden; at other times in smaller boats as far as Serajunge and Goalundo and thence by rail to Scaldah. It costs 12 to 14 annas for sending jute to Calcutta, some times as much as a rupee, i.e., from the latter part of Aughran to Chaitra, when we employ small boats of 200 maunds as far as Kanorgori, 24 *cos* off, and there tranship the jute to larger boats. We do not make use of the steamers, as they do not come up here. The River Teesta is too unsafe for steamers which we would prefer to boats. I, Godadhar, buy and sell from seven to ten thousand maunds. I, Horonath, and I, Ram Chunder, buy the same quantity. We purchase jute from *paikars*. We do not make advances to the growers, but the *paikars* occasionally take some money in the beginning of the jute season.

The *paikars* buy in *hals*, and in the houses of the growers. *Teesta* jute generally has a red tinge; pure white color is rare here. The water of *bheels*, tanks, and the river, is reddish in this part of the district; hence, we think the red color of the jute. Besides, the people here tie up the jute in hanks while it is wet, and that gives a red color. We do not think the red plant yields red fibre. Jute fibre is gradually deteriorating, for ryots grow more jute than they can look after. The cultivation this year has been six to eight annas less; jute sold here is called Kankina *pat*. We also send jute to Serajunge at a cost of seven and eight annas per maund, not for sale there, but simply for transmission by steamer to Calcutta, where we have our own firms. We never send jute to Dacca or Naraingunge. We buy at the seer of 90 tolahs. Jute is brought here from Nickligunge, Baora, Natagunge, and the villages lying at a distance of one day's walk. The *paikars* bring jute in carts or in small boats of 25 to 30 maunds. Half of the *Teesta* jute has yet to come to the market. Its present price is Re. 1-12 the maund. We do not charge any interest nor take

any over-weight from the *paikars*. The sellers give one to two seers as *dholta* (brokerage) over and above a maund. The *paikars* bring wet jute for sale. We drum the fibre here at a cost of Rs. 3 for 100 drums. We send jute yearly by the Teesta and Brahmaputra, and then via the Soonderbys and the canals. The *gunge* (mart) of Kankin sends about 60,000 to 70,000 maunds yearly. The traders come here from Serajunge and buy up from the *paikars* whom they allow one anna brokerage on each maund bought.

No. 31.—SHEIK MOTIWOOLLAH, NAZIR MAMOOD AND CHUTTOO (of *Kaligunge*),—*Rungpore*, 19th June 1873.

We are cultivators. I, Motiwoollah, hold a tenure of 22 *dones*. I have grown jute on half a *dona*. Last season I raised half a maund of fibre on a plot of the same extent.

I, Nazir Mamood, hold one *bish* or twenty *dones* of land. I grew jute last year on half a *dona* and got one and quarter maund of fibre. This year I have cultivated the same extent of land.

I, Chuttoo, have a tenure of five *dones* of land; I grew jute last year and got about twenty seers of fibre. I have grown this year on a little above quarter of a *dona*.

Jute last season sold at one rupee and eight annas and one rupee and twelve annas per maund of 90 tolahs to the seer. Jute grown here is called by the trades-people *kaligunge kosta*.

We all grow *dholta kosta* (white jute), the stalks and leaves of which are light green, and the seed-pods globular.

People grow red jute, but in small quantities. The stalks of these plants are red, and the seed-pods are somewhat reddish.

In this part of the country the *parbutea phit*, of which the seed-pods are long is not grown. Jute fibre is sold by us at the *Kaligunge Hat* as also to the *paikars* who come to people's houses and buy.

On the banks of Teesta we cannot grow jute in large quantities because we have no place to steep the stalks in. The Teesta current is strong and the steeping bundles are carried away, besides tanks, drains, and *khals* are not numerous here.

Jute is bought by the *mahajuns* of *Kaligunge* from the *paikars* who forward it to Calcutta direct in country-boats as also to Goalundo and Serajunge. Itinerant traders from Serajunge come here annually in the months of Bhadra and Aswina, buy jute in *hats* and from *paikars* and take them away in boats they bring up.

Jute is not grown under advances. People have been growing it for the purposes of trade for the last 14 years or so; but its cultivation for home use has been known from time immemorial. While this cultivation has increased, rice cultivation has not materially suffered. The *aus* and *aman* rice crops have in some localities been reduced very little.

Jute grows both on *aus* land and on *joli* (watery) land; it is sown in *Falguna* and *Chaitra*, on *joli* land and cut in *Ashādha* and *Śrāvana*, before water accumulates in the field. If water accumulates,

roots shoot out, and the fibre is spoiled. In some places after the jute crop, late paddy is cultivated.

Jute is shown on high-land in *Vaisākha* and reaped in *Bhadra* and *Aswina*.

Jute does not grow well on the same land for two years running. New land is yearly chosen for this cultivation. *Aus* and *aman* paddy is sown with jute.

Cow-dung and sweepings are used as manure on jute land in *Falguna* and *Chaitra*. Harrowing commences from the month of *Falguna*. Cow-dung is not bought and sold. No manuring is used after the sowing; oil-cake is not in use in this part of the country.

The cutting of the jute plants begins with the appearance of the flowers. The fibre from such cuttings is glossy and of a fine white color. If the plants are cut when in seed, the jute is reddish.

The Teesta jute has a reddish tinge on account of the scarcity of water for steeping.

The plants after cutting are left standing in the fields for two days; as when partially dried they rot sooner.

People plough their jute land. On *joli* land the plants give a larger yield of fibre and the crop is abundant; but the quality of the fibre is best on high *bari* (homestead) lands. Soil composed of clay and sand produces the best jute.

A *dona* of good land, well manured, yields three to three and half maunds of fibre. Drought and excessive rain are not favorable to the jute plant. Alternate rain and sunshine are essential to its growth. In times of drought the *aicha* insect eats up the leaves and damages the plants considerably.

The cultivation of jute last season was large, owing to the high price it fetched the year before. This year, in consequence of the reduction of price in the last season, a fourth less land has been sown with jute.

A plot of land, if well manured, will grow jute for two years; but the yield will be four annas less on the second year. We tie up jute in hanks of five and ten seers for sale. Wet jute, as a rule, is not so tied up. Last year it rained very heavily and continuously in the months of *Ashādha* and *Śrāvana*, and the jute plants turned red. The fibre consequently was of inferior quality. There is no special rate of rent charged for jute land. Jute seeds, as a rule, are not bought and sold. People keep their own seeds.

No. 32.—SHEIK IMAUMBUX, HASHIL MAMOOD, OBERAM DOSS, AND BOODHOO DOSS (of *Bhotamari*),—*Rungpore*, 19th June 1873.

I, Imaumbux, grew jute on five *dones* of land last season, and got about 22 maunds, which I sold at Rs. 1-12 to Rs. 2 the *kutchra* maund of 60 tolahs to the seer. This year I have grown on four *dones* only for want of labor.

I, Hashil Mamood, grew jute on four *dones* last year, and got four maunds of fibre from one *dona*, but the remaining land did not yield a good crop. I sold it at Rs. 2 per maund all round. This year I have reduced the cultivation to one *dona*.

I, Oberam, raised three maunds of fibre from one and half *done*. The yield would have been larger if I could have attended to the cultivation. I sold the jute at Rs. 2 the *pucka* maund. This year I have grown jute on one *done* only.

I, Boodhoo Doss, cultivated only half a *done* and got two maunds of jute, which, in the season, I refused to sell for Rs. 1-12 the maund. The fibre is yet unsold. I have this year grown on half a *done* only.

Except Boodhoo Doss, who grows both white and red jute, we grow white jute only. The seed-pods of both are globular; but the stalks of white jute are light green, and those of the red variety are reddish. *Parbuta* jute is not grown here, the seed-pods of the last description are elongated. It is grown by the people on the north at a distance of two miles. Both the former description of plants yield good jute, and if properly washed, present good white color. We know from experience that if jute stalks are steeped in insufficient and shallow water, the color of the fibre turns out to be reddish. The tillage of jute land begins in Māgha, and the sowing, when the land is low, in Fālguna and Chaitra. The high-lands are sown in Vaisākha. The early sowings are cut in Srāvana, and the late sowings in Bhādra and Āswina. Jute is and ought to be cut in flower, otherwise the fibre gets coarse. We steep the stalks in still river-water, placing the tops of the plants upon the bundles into which the stalks are made up. We also sprinkle cow-dung and earth upon the steeping bundles to ensure a speedy rotting. We generally steep jute at once after cutting. This is better than steeping two days after cutting. The fibre is fit for separation after 15 days. Fibre of plants cut in seed does not rot before 22 days. Good fibre is produced from the plants grown in homestead lands. We manure the land with cow-dung and ashes. We do not grow jute on the same land for more than two years running. On the third year jute will not grow on the same land. *Aus* paddy is rotated with jute, and if the land is low, with *aman* paddy also. The land is grown with paddy, &c., for two or three years; it is then again cultivated with jute. Jute grows well on *doas* land. Plants kept for seed are cut in Āswina and Kārtika. The seeds are then dried for three days.

We keep good plants for seeds; we sell jute at the *hāts* and occasionally to *paikars* who come to our houses to buy it. We do not grow jute under *adverges*. We sell by the *kutcha* weight of 60 tolahs the seer. *Sovari* or *aiteka* attacks the jute plants in seasons of drought and damages them considerably. The cultivation, which has been on the increase for the last 7 or 8 years on account of the high prices jute sold for, has been this season reduced by six or seven annas from that of last year. Formerly it used to be grown only for home use. The cost of growing jute on a *done* of land is about Rs. 4 or 5.

	Rs.	A.	P.
Ploughing	0 12 0
Rent	2 0 0
Weeding	1 0 0
Cutting	0 11 0
Separating and drying, &c.	1 0 0
Total	5 7 0

Jute will not pay if grown with hired labor and ploughs. We all work ourselves on the fields and use our own ploughs. If sold at Rs. 3 the *pucka* maund, it will pay the grower fairly. There is no special rate of rent for jute land. *Sunn* is grown by the fishermen in small quantities, and they make their nets with the fibre. *Mettes* is not grown here.

No. 33.—DHOJIER MAHOMED, BUXOODALLAL, AMER DALLAL, DHORKA DASS, KEENA NUISHO, AND INNATOOLLAH SHEIK (of Goberdhone),—Rungpoore, 20th June 1876.

I, Dhojier Mahomed, raised six maunds of jute from two *does*. This season I have cultivated half a *done* only. I, Buxoo Dallal, grew jute last season on 1½ *done* and got four maunds of fibre. The cultivation has been reduced to one *kali* only this year—(16 *kalis* make one *done*). I also am a jute broker.

I, Amer Dallal, am also a jute broker, and cultivate a little jute for home use.

I, Dhorka Doss, got 2 maunds of jute from a *done* of land last season. This season I have sown on the same extent of land. I, Keena Nuisho, had a cultivation of one *done* last year; the yield, on account of the inferiority of the soil was 1½ maund of fibre. This season I have cultivated three-fourths of a *done*.

I, Innatoollah, grew jute on 1½ *done*, and obtained four maunds of fibre. This season I have sown half a *done* only.

At Goberdhone we do not, as a rule, grow jute on more than two or three *does*; but we produce good fibre, and if we extend our fields, we will not be able to pay that attention to the cultivation of the plant and preparation of the fibre required in the manufacture of a good quality of jute.

The cultivation of the staple for purposes of trade has been going on for the last 20 or 22 years, but the increase has been marked within the last 10 years.

Formerly Mr. Stewart of Kaligunge had an agency at Goberdhone; but it has ceased to exist for the last four years.

We now sell our jute either to the people of the Serajunge firm of Bheem Gour Mohun Roy, or to itinerant traders from the village of Bhodor Simla to the north and from the village of Shealcote to the east of Serajunge, who come here in the months of Bhādra and Āswina, and stop till Chaitra and Vaisākha, when they make their purchases and go away. Last season in the months of Bhādra and Āswina Goberdhone jute was sold at Rs. 3 and 3-4, later on at Rs. 2, and at the present time it is being sold at Rs. 1-12, 1-14 and 2 the maund.

About 15,000 maunds of the jute, known as Goberdhone *kosta*, are annually bought and sold here. There is no *bazar* or *gunge* here. Some of us act as brokers and buy jute for the traders; charging half an anna brokerage from the buyers, and half an anna from the sellers per maund.

The growers would very much like to have an agency house of some buying firm here.

Some of us go to Cooch Behar, Kishoorbari, Adabari, Sheteo, Koomerirhaut in Rungpore and buy jute from those places, the funds being supplied by the Serajgunge firm above alluded to, and by itinerant traders. We buy and sell by the weight of 90 tolahs to the seer. We do not know at what price the *mahajuns* sold Gobarphone jute. People about here grow both green stalked and red stalked jute. *Dhola* variety is largely grown, and yields fine and better colored fibre, the red plant produces fibre of a reddish tinge, which is sold at two to four annas less the maund than the white variety.

The pods of both varieties are globular and the seeds of a brownish color.

The fibre prepared at Koomerirhaut, about six miles north-east of the Forunbari Thannah, is of the best quality, and for this reason that the bundles when under steeping are covered with *Shoontee* plants, (*abeer*, or the red-powder used in the *holi* festival is made from them) which gives a fine white color to the fibre.

Here, we place the tops of the jute plants, and the leaves of *babore* trees upon the bundles, when first put in to be steeped.

Three days after we place clods of earth upon them, to make them sink below the surface. No weight is necessary at first, because the stalks are then heavy. *Babore* leaves are sacred and we place them to propitiate the deity; steeping this way is called *Dhurum jank*.

We bring jute from Cooch Behar and other places generally on pack bullocks, rarely in carts, for there are no roads. A bullock can carry two maunds *pucca*; but we place eight to ten maunds on a cart.

The *mahajuns* either bring boats from Serajgunge or hire them here, and it costs from Rs 25 to 30, to send 100 maunds of jute to Serajgunge.

We pay eight annas for each bullock from Shinter in Cooch Behar, and four annas from Koomerirhaut.

We steep jute in the still water of the Teesta as well as in *dhools*. The jute plant cut in full flower and just getting into seed yields a nice glossy fibre. If cut too late, the fibre is full of bark or woody. When cut too early the fibre is clearer and looks more glossy, but it is very weak. After cutting, the plants are kept standing in the field for two days to allow the juice to dry. So treated, the stalks rot more quickly, and the fibre is not injured; steeping for 15 to 20 days prepares the stalk for manufacture. Insufficient or dirty water gives muddy color to the jute.

We *dallals* buy from *puikars* as well as from growers in *hats* and in villages. There is no rule about *dholla* (brokerage). It is sometimes 1 *poah* and sometimes 1 seer and $1\frac{1}{2}$ seer over and above the maund.

Generally we buy dry jute; but occasionally it is brought in a wet state.

At Gobarphone jute is tied up in bunks, each bank weighing about three seers, and costing Rs. 3-2 for the making of 100 bunks. We are aware of no process for bringing on the red color. People buy inferior fibre from other places and pass it as Gobarphone jute. Jute is gradually

deteriorating at places, for more is grown than can be well looked after. Good high *matial* land mixed with a little sand produces jute well. Low lands are sometimes sown with jute; but the fibre does not turn out good. A *dane* of good soil well manured yields three to four maunds of fibre. We manure jute land with cow-dung and oil-cake. Cow-dung is thrown at all times, but not after sowing. Oil-cake is put on the field when the plants are about a foot and upwards high, and the grass is weeded.

Ploughing begins in *Magma*, and the seeds are sown in *Falguna* and *Chaitra*. The *Vaisakha* sowings do not turn out well. A *pucca* seer of seeds suffices for a *dane* of land. Seeds are not sold. Good plants are set apart for seeds. Jute plants are cut in *Bhadra* and *Aswina* generally.

This year the cultivation of jute has been one half of last year's; the ryots lost by the low prices. Then after the sowing drought came on and in many places the seeds did not at all germinate. The plants have now recovered and look healthy. We have not seen jute with elongated seed-pods.

Where spare land is available, jute is not grown upon the same field for two years running; and when the same field is cultivated with it for two and three years, the land has to be heavily manured. People go about the field with *bangis* and collect cowdung, for the jute land. *Aus dhan*, as a rule, is rotated with jute, on the second or third year after which jute is again raised. Jute weakens the soil more than any other crop. The land which grows jute for two or three years will never grow tobacco.

We leave jute land either fallow during the winter or grow tobacco on it. Tobacco is reaped in *Falguna* and *Chaitra*, and soon after which jute is sown with, or without, additional manure. Land on which jute is grown for three years successively, is also cultivated annually with the tobacco in the cold months, though the crop of the latter does not turn out to be good.

Aicha attacks the jute plants in seasons of drought and eats up the tops and leaves. *Chhutre* is a blight which injures the plants during excessive rain when neck high, drying up the leaves, and thinning the stalks. The fibre from these stalks never find purchasers.

Alternate rain and sunshine are favorable to the plants when quite young, but when the plants are about a foot high sunshine is absolutely necessary, and afterwards alternate rain and sunshine again. The cost of cultivation is as follows:—

	Rs.	A.	P.
Rent of a <i>dane</i>	1	0	0
10 ploughings	1	4	0
Two weedings and pulling up the bad plants	1	0	0
Cutting, &c.	0	12	0
Separating, &c.	0	8	0
Drying	0	2	0
	4	10	0
Oil-cake	0	8	0
Total	5	2	0

The fibre is separated by repeated jerks in the water, the stalks having previously been cut about a cubit from the root-end and sufficiently steeped in water.

Jute is not grown under advances here.

Growers frequently carry the fibre to the *hāt* on their shoulders and on pack bullocks, and sell it there to the *dallals* and *paikars*.

Gunny is not manufactured here.

No. 34.—GOPAL CHAND, KOONERAM, JYTH MULL, BUCKTAR MULL, LUCHMI CHAND, AND BHOORA MULL, OSWALS (of Meergunge),—Rungpore, 21st June 1873.

We have been from ten to twenty years engaged in the jute trade, about 20,000 to 25,000 maunds of the fibre are annually exported from this mart to Serajgunge. We buy the *Teesta* jute, as also jute from a distance of twenty miles, which is brought here on pack bullocks. We buy by the weight of 90 tolahs, and sell at Serajgunge by the weight of 84 tolahs and ten annas to the seer. We make our purchases in cash from the *paikars* as also from the growers, but not through brokers and *aratdars*. We do not make any advances. We send jute in hanks as well as in drums in country boats *via* the *Teesta* and *Brahmaputra*. A hundred hanks, weighing twelve and a half maunds cost us Rs. 3-2 for making, and a hundred drums, Rs. 2-12. The hanks are made up into drums at Serajgunge, costing us another Rs. 3-2. We cannot generally send jute in drums; because intending buyers, at that place, suspect the quality of the fibre inside. No steamers come here. Now a days it costs us six annas to send a maund of jute to Serajgunge, but in dry months it costs us two annas more. We purchased jute last season at Re. 1-8 to 1-12 the maund, and sold it at Re. 1-12, 1-14 and 1-15 the maund. We sell through *aratdars*, who charge us commission at Re. 1 for every 100 maunds, besides half a maund of jute, *viz.* ten seers for the byerns' and sellers' *dingwallahs*, and ten seers for the *guddrewallah* of the *aratdars*. Half a seer is allowed as *dholla* (brokerage) for each maund. Besides the Peer and ferryman take some jute by way of presents. We trade both with our own capital and with the capital of the *mahajuns* of Serajgunge. The capitalists charge us Re. 1 as interest for every Rs. 100 per month, 1 rupee *batta*, and one rupee *hoondian* for every Rupee 100. Besides these charges we are obliged to sell jute through those capitalists only who lend the money. The jute trade has been carried on here for upwards of twenty years; but since 1252 B. S. it has increased year by year. A few itinerant traders also come here from Serajgunge and Goalparah to buy jute. New jute appears in the month of *Śrāvana*. In *Bhadra* the trade is very active.

We do not send jute to Calcutta. In buying here we do not charge any *dholla* (brokerage). In the season before last we bought jute at Rs. 3 to 3-4 and 3-8 per maund, and sold at Re. 1-8 to 3 the maund. We sustained losses during the last two years. In the year before we bought at Rs. 2-8 and 3, and sold at Rs. 3, and 3-8 and 4 the

maund. Meergunge jute is sometimes woody; because the growers to obtain a large yield, cut the plants late, and at a time when the water in the tanks, &c., is dried up. The jute is consequently coarse and insufficient steeping causes the bark to stick to the fibre besides spoiling its color. We have repeatedly pointed this out to the ryots; but they do not heed us, and persist in old customs. Ryots here, instead of cutting a few inches above the root, as is done in other places, cut as close to the root as possible, thinking that they lose so much in weight if they cut a few inches higher. The jute plant, if cut in flower, will yield half of what the produce will be if cut late in the season and in full seed. There are no Bengali *mahajuns* here.

No. 35.—BHOIRUB CHUNDER DASS, DHOOLI DASS, MEHER NUISHO, MADHUB DASS, RONMAMOOD, NITUM KHAN (of Meergunge),—Rungpore, 21st June 1873.

I, Bhoirub Chunder Dass, am a *jotedar*. My under-tenants grow jute on 15 *dones*. I, Dhooli Dass, am also a *jotedar* and my under-tenants grow jute on 7 *dones*. I, Meher Nuisho, cultivate 2 *dones* with jute. I, Madhub Dass, cultivate a little above a *done* with jute. I, Ronmamood, cultivate 1½ *done*. We have this season cultivated the same quantity of land, as in the year before. Several ryots in our villages have reduced their cultivation, so that if all goes on well, the crops this year will be four-annas less than in the past season.

We grow both the *aus* and *hemunt* jute as also the white and red varieties, called *lat pat* and *dhola pat*. The seed-pods of both varieties are round. There is another kind of red jute, the fibre of which has a reddish tinge. It is called *meslay* and its seed-pods are elongated. Jute has been cultivated on a large scale within the last 20 or 25 years. Before that time people would grow it for home consumption.

Meergunge jute generally turns out to be full of bark, (*kaishla*) because we cannot cut the plants in time, being engaged with the paddy crop. Besides the plants cut in flower do not yield a large quantity of fibre. We cut in seed and many people cut when the seeds are almost ripe. Hence the fibre becomes woody. Besides when these plants are cut (in the months of *Aswina* and *Kartika*) the water in *heels*, &c., almost dries up, and the stalks do not properly rot. Plants cut in seed are steeped for 25 to 30 days. The soil of jute land here is not very good, containing a larger proportion of sand than clay.

Jute land close to our home-steads is manured with cow-dung and ashes, but the land far off is, as a rule, not so manured.

Jute is an exhausting crop to the soil, and we do not sow it on the same land for more than two years running. In the second year we grow *aus* paddy, and on the third or fourth year jute is again cultivated.

Last season jute sold at Rs. 2 and 1-12 the maund. Later on the market fell and it sold at Rs. 1-8. It is now selling at Rs. 1-7 the maund.

About two-annas of last year's crop remains unsold.

We got from two to three maunds of fibre per each *done* last season.

Good *doakla* land well manured will yield 3½ maunds of fibre per *done*.

We sell jute to the Oswal traders of Meergerunge.

The weight is of 90 siccas to the seer.

The *aus* sowings are made in Chaitra on the low lands, and the later sowings in Vaisākha on the high lands.

If the land be low (*jok*), the seeds are sown without rain but not the high lands. There is no special rate of rent for jute land.

It costs us Rs. 5 or thereabouts to grow jute on a *done* of land. We, however, work with our own hand and our own ploughs. If the market rises we intend extending jute cultivation next year.

We do not use oil-cake as manure.

We place the tops of jute plants and clods of earth upon steeping bundles of stalks, and separate the fibre from the root-end by jerks in the water.

We wash the fibre in the water in which the stalks have been steeped. We then feel the want of water.

The Teesta is about two miles from Meergerunge, and we cannot consequently use it for steeping in.

Low land is cultivated with very little jute, as the plants have to be cut whenever water begins to lodge in the field. Plants allowed to stand in accumulation of water yield fibre full of roots.

The tillage of jute land which is manured in Magha with cow-dung by the females of the family commences in Aughran.

We do not grow jute under advances. After cutting the plant is steeped at once; but some people who cannot afford to do so, keep the stalk standing for a day or two.

No. 36.—MEGH RAJ BABOJ AGENT OF TEEKUN CHUND MOKOON CHUND (of Serajgunge).—*Pubna*, 20th May 1873.

My firm deals largely in jute, and has done so for the last twenty years. We buy and sell some seventy or eighty thousand maunds of jute annually; we also buy and sell jute on commission, which is one per cent. in the case of parties taking advances from my firm. These parties, however, from whom we receive this commission are all our countrymen, who with our money go about from place to place and buy up jute and sell it through my firm. Such parties cannot make use of any other firms in effecting a sale of their commodity. Besides this commission they have to pay the firm advancing the money, nine per cent. interest on the amount advanced. Our business has increased during the last five or six years. There are twenty other firms like ours at Serajgunge. We receive nothing from the purchasers. There are besides our countrymen, Hindoos and Mussulmans, who either under advances or without any advances sell jute through our firm, and we charge such men commission at the rate of two annas per maund and in cases of unusually large sales one and a half annas, and at times for retail sales three annas. I

estimate the money annually advanced to the jute purchasers by the several firms of Serajgunge at sixteen to twenty lakhs of rupees. Most of our countrymen receiving advances go to the districts of Rangpore, Goalpara, Begra, Mymensing, &c., for jute. Jute that comes from Bullorampore, Gouripore, Kansharoo, Kankripara, Bilashipara, Backserhaut, Cooch Behar, Demagoori, is the best. The medium quality comes from Sholemari, Singmari, Neshbitgunge, Noonkhaos, Bhoosikhausma, Patamari, Jatrapoor, Nagressori, Bhotamari, Chilmari, Kankina, &c. Cooch Behar has been supplying jute for the last three or four years only. Jute produced in 1277 and 1278 B. S. was really very good, but it was not so in 1279 B. S., when a larger quantity of inferior jute came to the market. This is owing to the rainfall not being plentiful at the time the fibre was washed. With the exception of Bilashipara, Kansharoo, Gouripore, and Cooch Behar, jute imported from other places in the north was inferior. Inferior jute generally comes from Churabhandar, Baora, Ghoramara, Kishoregunge, Boorirhaut, Caoney, Meergerunge, Nowbagunge, Kamarjani, Kaligunge, Tebrigunge, &c. All these places grow what we call northern jute. There is another kind of jute imported to Serajgunge called *Churooa*. It comes from Mowrerchur, Muthoorapara, Chokarchur, Dewangunge, Badiabaj, Islampore, Simooltora, Jharkata, Pingna, &c. This is of medium quality, and is better than what is called *deswal* jute. It is the fibre of plants mostly grown on *chur* lands. The other kind of jute brought for sale is the *deswal* grown at Sheakole, Doalia, Koijoori, Shajadpore, Bhodorepara, Chowbelia, Betkandi, Toolshigunge, Neemgatchia, Pangasia, &c. There is another kind of jute called *Beelan*, which comes from Rajshahye and is grown at Chalan Chalan *bheel*. The largest quantity received at Serajgunge is the northern jute. The prices ruling at Serajgunge are as follows:—

Best northern jute ...	At Rs. 3-4,	3-6,	3-8 & 3-10	the maund.
Medium northern jute ...	" 3-12,	3-2,		do.
Inferior do. ...	" 1-10,	2-2,		do.
Best Churooa jute ...	" 2-4,	2-8,		do.
Medium and inferior ...	" 1-14,	2-4,		do.
<i>Deswal</i> jute ...	" 1-10,	2-2,		do.
<i>Beelan</i> do. ...	" 2-4,	2-6,		do.

The weights, at which jute is bought in the interior, vary from 60 to 90 sicca weights to the seer. Here it is sold by the seer of 84 tola and 10 annas. The purchaser at Serajgunge gets half a seer to each drum weighing about a maund. This is called in this part of the country *dholta* (brokerage). Besides this, there is generally an overweight allowed to the extent of another half seer. Independently of these allowances, the seller has to give to the crew of the buyer's boat five seers in every hundred maunds, and the same quantity is given to the men of the brokers' boat, and if the buyer happens to be an *oswal* or a man of Bickaneer, he gets 10 seers over, and above 100 maunds from the Bengali seller. From his own countrymen he takes only five seers. No other purchasers except *oswals* are entitled to this allowance. At Serajgunge jute is bought and sold on the boats, the fibre is landed to be made up into drums, and it is then that the article is examined by the purchaser. If it turns out to be

inferior to the sample, the buyers, sellers, and brokers meet, and reduce the price according to the quality of the fibre. If they cannot agree, they refer it to a *punchayet*. The making of each drum costs four to six pice paid by the seller. The buyer's boatmen generally weigh the jute and get five seers, as already stated. The value of jute purchased has to be paid down on the 20th day after the purchase.

No. 37.—**DWARKA NATH BROOEA** (of *Cagmari*),
Pubna, 1st May 1873.

I am a broker of jute, and represent the firm of Addya and Bhooban Paul. I have been a jute broker for the last 10 years. I do business at Serajgunge. We sell jute for others, we do not buy any; we charge brokerage at the rate of two annas per maund. Annually my firm sells about 30 to 40 thousand maunds of jute. We make advances to jute dealers, locally called *beparies*, who go to different places, buy up jute, and bring it to Serajgunge, where we sell it for them. We do not charge any interest. Our commission is paid by the sellers. We also sell for other *beparies*, who do not receive any advance. They too pay two annas per maund. My boatmen get five seers of jute for every 100 maunds sold. The boatmen of the purchaser weigh the jute bought. A large quantity of jute comes from the north, *i.e.*, from Kungpore and Gualpara, a small quantity comes from Rajshahye, which we call western jute. The supply from Mymensing goes by the name of eastern jute. Shahajadpore and Koijoori send jute which we call *dakhina*. We advance annually some Rs. 15,000 to jute *beparies*. Last season there was a larger quantity of jute in the market here than in any of the previous years. About one-fourth of the northern and eastern jute has still to come to the market.

We make advances in the months of Jyaishta and Ashadha; we have not yet begun making them. There are some 35 firms like ours, exclusive of the houses of *owals*. The *uttariya* or fine jute is purchased by Messrs. Ralli Brothers, by Messrs. Wilson and Co., and by Bengalee *mahajans*, who send it to Calcutta. The jute company here buy inferior jute for their own use, *i.e.*, for making gunny cloth. Jute is sent to Calcutta by country boats, steamers, and rail, at a cost of four annas by boats, and of 10 annas and upwards by steamers. About 40 lakhs of maunds go out of Serajgunge annually. Last season the imports of superior jute were small in proportion to the import of medium and inferior jute. I estimate the imports of really good jute last year at four annas, and medium and inferior jute 12 annas. The river near Serajgunge is navigable throughout the year. More jute is sent by steamer than by country boats.

The business of buying and selling jute is done in boats, and the prices settled by figures described on the palm of hands; the prices are never spoken out. Jute is weighed on the boats and brought on shore to be made up into drums. The weight by which jute is bought and sold here is 84 tolahs

and 10 annas to the seer. The rent of the river-side land used for making up drums is four annas per 100 maunds paid by the seller. The broker employed by the purchaser gets generally a fee of two pice per maund. The brokers of large firms, such as Ralli Brothers, get four annas per 100 maunds paid by the purchaser. My inquiries lead me to believe that the cultivation of jute this season will be about one-half of what was grown last year. The best jute is now sold for Rs. 2-10 per maund; medium and inferior for Rs. 1-10 to 1-12 per maund. In the past season superior jute sold at Rs. 3-10 to 3-14 per maund, and in the season before last at Rs. 5 per maund.

No. 38.—**BAUL SHERK** (of *Borokandi*),—*Pubna,*
22nd May 1873.

I am a cultivator, and my tenure consists of ten pakis of land, out of which I grew jute on two pakis last season. I have this year sown jute on only one *paki*. I grow *boro pat* or jute, which is of a white color, the seedpods of which are globular. The *joli* or low land sowings take place in the month of Falguna, and the plants are cut in the month of Jyaishta or Ashadha, in fact at any time when the rivers begin to rise, whether they are then fit for the sickle or not. The land upon which I have sown is neither too low nor too high. It is *doas* land. I sowed the seed in Chaitra last, and the young plants are two to three feet high. I intend cutting them in Sravana next when they are in flower. The jute plants do not run to seed before the month of Kártika. The tilling of jute land commences in the month of Mágha; we plough it seven or eight times, less will not do. The seeds are sown broad cast after the land is moistened by a shower of rain, the ladder is then passed over, and the seeds covered with earth.

In five or six days the seeds germinate, and when the plants are fourteen or fifteen inches high, we weed out grass. When the plants grow up to a height of four feet there is another weeding, and the ill-grown plants are pulled up and thrown away. When the plants are six feet high, they are cut. I have seen plants as high as eleven or twelve feet. The plants are cut with a bill-hook close to the ground, tied up into bundles, and at once steeped in water, clods of earth being placed on them to make them sink. Sometimes the tops are lopped off before steeping. The steeping goes on for ten or twelve days, when the plants are ready for the separation of the fibre. This is done by jerks in the water. We make it a point of steeping and washing jute in clear water, for the finer the water the better will be the color. The water is then wrung out and the fibre dried for two or three days. It is then tied up in hanks and sold to the *paikars* who go to our houses and buy it up. I do not grow jute under advances.

We hold the stalks by their root-end, break them above one foot, and separate the fibre by repeated jerks in the water. I wash the fibre in the same water in which it has been steeped. As a rule, we work on the fields ourselves, but

growing jute on a *paki* of land with hired labor costs Rs. 6 to 7:—

	Rs. A. P		
Seven ploughings or 14			
ploughs and ladders ...	1	12	0
Rent ...	1	2	0
Two weedings ...	2	0	0 ⁴
Cutting ...	1	0	0
Steeping, &c. ...	0	8	0
Separating and drying ...	1	8	0
Total	7	14	0

We keep in each field a few plants for the seeds. We do not manure land for jute, which is an exhausting crop and is rotated with early paddy. It requires about four seers of seed for a *paki* of land. I got eleven maunds of fibre last season, and after keeping about half a maund for home use I sold the remainder for Rs. 12. The market last season was very dull. I grew the *deswal* jute. In the season before last jute was sold in our village at Rs. 4 per maund. The weight by which we sell jute is the seer of 84 tolahs and 10 annas. There are three kinds of cultivations in our part of the country. The *joli* or low-land cultivation, the *moddhum* or cultivation on land neither very high nor very low, and the *namla*, i. e., cultivation on high land. Low-land sowings are done in *Fālguna*; the *moddhum* in *Chaitra*, and the *namla* in *Vaisākha*. I have seen jute plants with long seed-pods, but they are not grown in our part of the country. Ours is all white *pdt* with globose seeds. *Meekut* is also grown here in limited quantities. There is no *sunni* cultivation here. Jute grows best on *matial* land.

Over-steeping makes the fibre weak; under-steeping makes it woody, locally called *kaishla*. I sow mustard on jute land in winter. As a rule, jute land is not manured in our quarter. Jute will grow on one and the same plot of ground for two or three years running, but the yield year after year will be less by two-annas each year. In the month of *Kārtika*, the plants kept for seed are cut. The tops are lopped off and dried for three or four days, and afterwards stored. We do not moisten the seed before sowing. Seeds are sold by the maund, and the value is from Rs. 2 to 5. Alternate showers and sunshine favor the growth of jute plants. Excessive rain does not give a large yield. Drought stunts the growth of jute. *Beechas* make their appearance once in every three or four years in about the hot months, and attack and partly destroy jute plants. In our neighbourhood, *kopalées* manufacture gunny bags and sell at the *hāts*, where they are bought for local use. Jute cultivation has been of late on the increase, but this year it will be reduced to about one-half, owing to the loss sustained by the growers last season from the fall of prices. There is a kind of insect which looks like the white-ant that sucks the jute plant and causes the black specks which are not unoften seen on the fibre. The plants become rooty, if they stand in water for any time. Last season, some of the ryots abandoned their jute

on the field. The leaves of the white jute are used as a pot-herb. Some ryots tried the cultivation of red jute sometime ago, but it was a failure.

*No. 39.—BOHIM PORAMANICK (of *Lushkurpoor*),
Pugna, 23rd May 1873.

I am an agricultural ryot and I cultivate one and a half *khedda* of land; one *khedda* being equal to 16 *pakis*. I have been growing jute for the last four years. I grow two kinds, viz., *dhola pdt* and *nalita pdt*. I also grow a little of *mesta*. In the first year I commenced with one and a half *paki*, in the second year, two *pakis*, and two and a half *pakis* in the third year. I have grown jute this season on two and half *pakis*, I would have increased the cultivation, but the market last season was very low, and I have grown *nalita pdt* on only half a *paki*. The seed-pods of this variety are elongated, while those of the *dhola* are globular. The *nalita* stalk is red, and the leaves have red veins. The *dhola* stalk is white, and the leaves of a light-green color. The fibre of the *nalita* is of grey color and longer than *dhola*; that of white jute is of better quality. The yield of the last season was twelve maunds, being the produce of only one and a half *paki*. The rest abandoned on the field, and subsequently used the plants in walling my house, the market being low. I could not think of wasting my time and labor in cutting the plants. I grew *mesta* on one-fourth of a *paki* and I got about ten seers of fibre, which I sold to the paper-makers at Serajunge at the rate of Rs. 5 per maund. I sold both *nalita* and *dhola* jute mixed up together for Rs. 3 per maund in the beginning of last season. The price after that time fell, and the same kind was sold for Rs. 2 and Re. 1-12. The land upon which I grow is chur land, flooded annually. I do not as a rule manure the land. The deposit of silt left by the flood, acts as manure. I grow jute on one and the same land for two years running. *Aus* paddy is rotated with jute. *Matial* land, high and well manured with cow-dung, is favorable to the cultivation. In case of rich soil well manured, the yield of fibre is about nine maunds. As a rule, the growers have reduced their cultivation by six-annas. The commercial designation of jute grown by me and my neighbours is *deswal pdt*. My house is about eight miles from Serajunge. Every ryot in our part of the district grows jute, the cultivation of which, for home use, has been carried on from time immemorial. It has been cultivated as an article of commerce for the last 25 years or so. The cost of producing jute on a *paki* of land is about nine or ten Rupees, viz.:—

	Rs. A. P.		
Seven ploughings or fourteen ploughs, at six			
ploughs per rupee ...	2	5	6
Two weedings, twenty men at six per rupee ...	3	5	6
Cutting the plants and removing ...	0	10	9
Separating fibre and washing, ten men ...	1	11	0
Drying and bundling up, four men ...	0	11	0
Rent of land ...	0	13	0
Total	9	7	9

I have ploughs, and my people work on the fields, though occasionally I hire labor, when there is pressure of business. In the month of Aughran, we commence tilling land for jute. In the cold season, we grow *kulai* or *surao* on jute land, cutting the crop in Falguna. The land is again ploughed up well, and jute seeds are sown in Vaisákha. We sow seeds in Falguna on low lands where there is an apprehension of flood. The Vaisákha sowings are generally on high lands; we do not grow *kulai* or mustard on low jute lands. At the latter end of Ashádha and the beginning of Srávana, the Falguna plants are cut. Those of Vaisákha from Bhadra to Kartika. Two and a half seers of seeds suffice for a *pahi* of land, and in case of early sowings we do not wait for rainfall. The Vaisákha sowings take place after a shower of rain. In three or four days the seeds germinate, and when the plants are about six inches high, the first weeding takes place. When they are three feet high, there is another weeding, and bad plants are pulled out, and the field thinned. The plants are cut when in flower, we leave ill-grown plants for seed. These plants are cut in Kartika and Aughran. The seeds are dried for three days and stored up. We do not buy and sell seeds; they are sold in some *hats*. We give away seeds *gratis*; we exchange labor which is called *ganta*; we also exchange ploughs. The system of *burga* means this—the land is mine, and I have to pay the rent and provide for the seeds, but another cultivates it at his own expense. The produce is equally divided. After the plants are cut, they are at once laid in stagnant water and kept there, the early plants for eight or ten days, and the Vaisákha plants for fifteen or twenty days. We then separate the fibre by repeated shakes and jerks in water from the root-end; the fibre is afterwards washed in clear water, dried for two days, and tied up in hanks. Sometimes the *patkars* come to our doors and purchase the fibre; at other times we sell it in market. We sell it for cash; we do not grow jute under advances. Bad water imparts a bad color to the fibre; over-steeping weakens and discolours fibre, and under-steeping makes it woody. The depredations of *beechas* are most damaging to the jute plants. Hailstones destroy jute. There is no particular season for the appearance of the *beecha*. Alternate rain and sunshine favor the growth of jute plants. Too much rain stunts their growth. Too much drought kills the plants. Jute is an exhausting crop. The second year's yield is one-eighth to one-fourth less than that of the first year. *Mesta* is grown on high land, and the seeds are sown in Vaisákha. *Sura* is grown in very small quantities by the fishermen for nets. Jute fibre is generally deteriorating. Last year was a bad year; the evil lies in the accumulation of water at the root, which makes the plants rooty. The black specks so often seen even in otherwise good fibres, are caused by the fall of hailstones on young plants, and by their striking against each other in a gale. Each grower keeps a little jute for home consumption. I kept one and a half maund for home consumption last season. The weight by which

jute is sold is 84 tolahs and 10 annas to the seer. Gunny-bags are not made in our village. White jute is more largely grown here than red.

No. 40.—MR. THORNTON (of Naraingunge),—
Dacca, 23rd April 1873.

The quality of jute last year was much worse than the year previous. The season 1871 was very good. The quality has been gradually deteriorating. The outturn of the season 1872 was about thirty per cent. more than in 1871. In the season 1871-72, the boats of the country were pressed into the Government service for the Lushai Expedition. This blocked up the jute. The Calcutta market rose as high as Rs. 4-4 for good fibre about March. This was about sowing time, and the high prices induced the ryots to sow an immense amount of land with jute, so much so that they were quite unable to manage the manipulation, hence the deterioration.

I think they are sowing much less, possibly 6 to 8-annas less. The average price has been about Rs. 2-2 this season. The ryots say 12 to 14 annas a maund covers the growers' outlay. The seed for sowing is taken from the plants outside the field, that is, from the stunted plants which will not yield fibre good enough for the market. Jute comes to this mart from the banks of the Luckea, Tipperah, Burrisaul, and Sylhet, probably as high up as Ashmanigunge; very good jute comes from Bhawal, but the water there is very bad. Jute is soaked in running water. I think the mud put on the jute to sink it, spoils the color.

The grower takes his jute to the *hát*, it then goes into the hands of the *beparies* who buy at an average price without making a selection.

Another way is, the head man or some responsible man collects the jute from the growers and ships it or takes it to Naraingunge, &c.; he being under advance to the *araldars*, and having in his turn advanced money to the growers. The *araldar* sells it to the merchant without letting the *bepary* know anything about the price. The system of advance is in general use all over the country. The *araldars* commission is 2 annas per maund. The packing of wet jute is a great cause of deterioration; it is brought into the *hát* in small boats exposed to the weather, and put into the large boats in any state. I know of *mette*, it grows up the Luckea in small quantities; it is a woolly reddish fibre, and would probably not spin well. I also know *dhenros*, its fibre is very brittle; it is generally sold separately from jute.

Mesta is sold and mixed with jute. I only know of three descriptions of jute proper, Backrabad, Bhatial (this grows to the south of Naraingunge), and Mymensing (northern). Of the last named jute, there are several descriptions. The Bhatial is sown earliest, and is now six inches high; next is Backrabad now sowing, and last the northern jute. My idea is that the best jute fibre is about ten feet long, thick, soft, and silky; and of a bright golden color. Jute-growing has increased the wealth of the population immensely. I do not think rice is such a safe crop as jute, which is less liable to damage.

No. 41.—**BABOO MADAN MOHUN BYSACK** (of Dacca).—Dacca, 24th April 1873.

I am engaged in the jute trade. I buy at Naraingunge, Kaligunge, and Bhawal. The best jute comes from Bhawal.

Good jute must be lengthy, soft, shining, strong, and whitish or yellowish.

The cultivation of jute has largely increased of late owing to the demand.

About eight or nine years ago, jute was a large article of trade. The cultivators do not grow jute under advances. But the *beparies* take advances from the *aratdars*. Jute cultivation has improved the state of the lower classes. Jute is here known by the following names:—"bhawal," "backrabadi," and "bhatial." *bhatial* grows to the south on the banks of the Ganges, *backrabadi* on the east of the Megna, *bhawal* to the north of Dacca.

Jute land is manured with cow-dung. The plant is cut when in blossoms, not when in seed, as in the latter case, the fibre will be coarser. Immediately after being cut, the plants are steeped. They are not stacked in the field for a day or two. If possible seeds for next year's sowing are taken from the best and most healthy plants.

Jute is steeped mostly in stagnant water, and also in the *khals*. I suppose running water would improve the quality. I cannot say in which it would rot quickest.

If left too long in water the fibre would be soft and weak. Jute grows on both high land and low land; the former is the best. Jute was largely cultivated on indigo land and did well. I hear one-eighth of the produce is still in the hands of the growers. Less land will be under cultivation with jute this year, but it is impossible to say to what extent. I know of other fibres, *mesta* and *dhenros*. Sometimes these are sold and mixed with jute; *mesta* is generally used for paper-making.

Dhenros is grey and not strong; it comes in small quantities. It is used for making ropes. I know *dhinchia*, it does not come to this market.

The cultivators sell their jute all in one lump, either in the house or in the *hat*. The merchants, i.e., shippers for the Calcutta market, who buy through the *aratdars*, buy on sample and assort the qualities; they generally put inferior quality inside the drums.

I suppose jute could be improved by careful cultivation, manuring, &c. The demand for fine quality is increasing, and for the reason that so little is produced. Jute has deteriorated, because it has been grown on poor land, and carelessly prepared, and because the cultivators could not cope with the work for want of labor.

No. 42.—**MR. M. A. GEORGE** (of Dacca).—Dacca, 24th April 1873.

I was in the jute business in 1867-68, and have been again for the last two years. I do not find that jute has deteriorated, indeed this year, I think, it is, if anything better, but it varies in different districts.

Perhaps one-sixteenth of last year's jute remains in the hands of the growers unsold. The average price of this year has been about Rs. 2 per maund. Last season it was about Rs. 3-8. During the past season, the outturn of jute was probably 25 per cent. larger than last year.

The best jute comes from Kurimgunge, Aralia, Bhawal (from this place the jute was not so good this year, as there was so much that the ryots had not time to manipulate it, and indeed much was left in the ground uncult), Backrabadi (this jute was also weak this season), and Poobali. The jute from all these places comes to Naraingunge. Bhyrubazar jute is very good. I think all jute comes from one kind of plant.

The growers do not take advances from the dealers; the poor ryots may, at times, take advances from the zemindars. The dealers take advances from the *aratdars*, in consideration of which they have to pay 2 to 4 annas per maund. The rate depends on the profit made; 2 annas is the correct charge. There is no guarantee for the fidelity of the *beparies*. Jute is cut when in flower; if cut later, it becomes hard and rooty. The plant is soaked in stagnant dirty water; it will not rot so soon in running water or in clean water. Very dirty water discolors the fibre. If soaked in clean water, the fibre would, doubtless, be improved, but it would take a much longer time to rot.

In Naraingunge, I buy through the *aratdars*; adulteration of jute is universally practised, as bad jute is mixed with the good inside the bundle. I buy here and in Naraingunge on sample. The same districts supply this place as Naraingunge, but here I buy direct from the dealers who thus save *aratdars*. The expense of sending jute to Calcutta is 4 to 10 annas per maund by country boat. I know of the following fibre-yielding plants:—*mesta*, *dhenros*, *bara chucker* or *moorva*, and *rajput*. The natives will certainly sow much less than last year, probably one-third less. In some places there was a loss to the cultivator in growing jute, not only of his labor but of actual cash, for instance in *bhatial*. Jute at times sold as low as Re. 1 to 1-2 per maund. Probably jute cost Re. 1-8 per maund to cultivate. The outturn per beegah may be estimated at six to ten maunds according to cultivation.

No. 43.—**ANUNDO CHUNDER BAGCHEE** (of Naraingunge).—Dacca, 25th April 1873.

My firm is at Naraingunge and deals in jute. I have been in the jute business for the last ten or twelve years. Annually my *arat* sells thirty to forty thousand maunds of jute. The import of last season was larger than the previous years. The ryots had received a good price for their jute the year before, and this induced them to extend their cultivation; but the market fell, and to my knowledge a number of growers suffered loss. The price of jute the year before was up to Rs. 4-12; the highest price realized this year was Rs. 2-8, and on rare occasions Rs. 2-12. Inferior kinds of jute sold for Re. 1-2 and even Re. 1 the maund. Jute imported to Naraingunge is from

Bhatial, Noakhally, and Burrisaul, from Mymensing (Boorirhat), Shumboogunge, Pombari, Goojurdia, from Backrabad, Singapore, Sorail, Kurimgunge, Rajaghat, &c. The *beparies*, who are under advances to us, bring their jute to our *arat* for sale, and we sell it to the shippers, charging a commission of half anna to six annas on each maund, payable by the sellers. We have to pay out of this commission one pice in the maund to the brokers, through whom these sales are effected. The *beparies* get their advances from us in the month of Ashadha. They give no security for the amount advanced, nor do they execute a bond. The loan is simply entered in our books; we advance from Rs. 25 to 1,000 to each *bepary*. As the jute is sold, the *beparies* pay us. Interest at the rate of 18 per cent. is sometimes charged upon the money advanced in addition to the commission. Those *beparies* who do not take advances have to pay the same commission as those who do. My firm does not send jute to Calcutta. The quality of the fibre is gradually deteriorating, and last year the Backrabad jute, which is generally good, turned out to be inferior. The causes of this deterioration are poor soil and extended cultivation. I am aware of ryots actually abandoning their fields of jute. Last season, jute was not profitable to the growers, as the market was very low. I do not know the cost of cultivation; but on inquiring into the cause of ryots' abandoning their jute, they all said it would not pay them to cut the plants and prepare the fibre. The best fibre that comes to this mart is from Kurimgunge and Boorirhat.

No. 44.—MR. R. G. BUIST, *Agent* of Mr. H. Cox (of Naraingunge),—Dacca, 25th April 1873.

I have been in the jute business since 1866, and working in Dundee up to 1869, when I came out to India. I have been at Naraingunge five months. As a rule, I purchase jute through the *aratdars*, but occasionally I get *beparies* to sell it to me direct. There has been no really fine jute at Naraingunge this year, and the price of the best procurable has been Rs. 2-10 per maund. The Kaligunge jute is generally very good, but this year it has been a complete failure owing to its being steeped too long. The *aratdars* agree in attributing this to want of labor. The *Bhawal* jute has been fair, but the *backrabad* has not been so good this year as in other seasons. I bought some very good parcels of *Kurimgunge* jute. The cultivation of jute last year was larger than in any previous years, so much so that it is believed that one-eighth of the crop is yet to come to the market. My inquiries also lead me to believe that, owing to the immense quantity sown last year and the want of labor, fields of jute have been left uncultivated and allowed to rot. I myself saw this state of things on the banks of the Megna. I buy jute at Naraingunge in *moras* or skeins, and, after picking out the very low stuff, drum it. At present there is a demand for fine quality of jute, because this year's produce has been only

good, medium, and low. After jute gets into the hands of the manufacturers at home, the bales are opened and re-assorted suitably for various qualities of spinning. A great quantity of jute is used for gunny-bags and for bessians for packing purposes. It is also used very largely for carpets. Eight pounds per ton C. F. and I. enable the paper manufacturers to use the jute cuttings.

The jute imported to Naraingunge this year has been very much below the quality of previous years; the fibre being weaker and the color not so good.

No. 45.—DOORGA CHURN SHAW, *ARATDAR* (of Kaligunge),—Dacca, 1st May 1873.

From 35,000 to 40,000 maunds of jute passed through our hands last season. Jute comes from Bhawal to this place. Jute grows in all kinds of soil as far as I know. The *beparies* bring jute to us; they do not take advances from us. Some have their own capital and some borrow from shroffs.

We sell our jute here; we do not send it to Naraingunge or Calcutta. The purchasers ship direct from here to Calcutta. About a lakh of maunds has gone from here to Calcutta this season. Last season about 80,000 to 90,000 maunds went to Calcutta. The ryots will cultivate much less this year probably one-half to one-third less. This continual rain we are having now is against sowing, as it will rot the seeds. Sowing has been completed to a small extent.

The jute is now above ground. The jute is in long hanks when it passes through our hands. The buyer (*mahajun*) makes up the drum; it costs Rs. 4-4 to Rs. 5 for making up 100 drums. Some of the *beparies* take the jute down to Naraingunge. It goes from here direct in boats to Calcutta at a cost of 12 to 14 annas a maund. It cost 2 annas per maund to send it to Naraingunge. *Bhawal* jute is the best that comes here. I produce two samples, one gray and quite rotten, the other very nice, having a good color and being fairly strong. About half the outturn was like the former. About one-eighth of the last season's crop is still unsold, so I am told. The importation is brisk from August to December. Some of the last season's jute has been quite abandoned in consequence of the low prices. We charge a commission of two to three pice which is paid by the buyer.

I have often seen the drums being packed, and bad jute placed inside the drums. Gradually the proportion of inferior jute is increasing here, and some say for every 10 maunds of good, 15 maunds of inferior jute comes to market. I think the growers pay less attention to the jute. Jute comes here entirely in boats. The average price here this year is Rs. 2 to Rs. 3; last year it was Rs. 3-8 to Rs. 4-12.

No. 46.—GOOROO PROSHAD MOOKERJEE (of Lackpore),—Dacca, 2nd May 1873.

I have been at this place for the last 45 years doing *aratdar's* and broker's business. For the last 10 or 12 years I have been buying and selling

jute. About a lakh of maunds of jute is annually imported to this mart by the *fureaks* who sell it through me and other *araidars* to the *beparies* or *mahajuns* who come from Dacca, Nagarpore, and Naraingunge, Messrs. David, Thornton, Madan Mohan Bysack and others buy their jute here. We get half an anna per maund by way of commission. Last season about 15,000 maunds of jute passed through my hands. There are other *araidars* here; jute comes here from Aralia, Shumboogunge, Bormee, Capsasia, Ekorea, and other places. The *Aralia* jute is the best. I sold this kind last season at Rs. 2-14 to Rs. 3 the maund. Inferior jute was sold at Rs. 2, 2-6, and Rs. 2-8 per maund. Jute purchased here goes to Dacca, Naraingunge, and Calcutta. I have observed that jute fibre has of late been not so good as formerly. I think the ryots have not been careful in selecting lands and in cultivating jute and preparing the fibre. My impression is that owing to the high price jute fetched in the season before last, the growers about here increased their cultivation fully 50 per cent. over and above the previous year's cultivation. The market of last season, however, fell, and the growers were so much disappointed that many of them actually left the plants uncut in the fields. The people will, it is believed, reduce their cultivation to about one-half. *Dhaksunder pat* and *biddyasunder pat* mostly come here. The former is white and in greater demand than the latter, which is reddish. I know *mesta pat*; it goes to Chur Sindore for sale. It is an inferior kind of jute. The *araidars* do not make any advances to the *fureaks* who go about from village to village collecting jute and bring it to the mart for sale. The *fureaks* bring the jute in skeins, and those who purchase it from them do so through the commission agent.

No 47.—IBRAHIM SHAIK (of Samoollea),—Dacca,
2nd May 1873.

I am a cultivator holding 14 *kanis* of land. I have been growing jute for the last 7 or 8 years. I used to cultivate one *kani* with jute before, but last season I doubled the cultivation and grew the staple on two *kanis*. I got ten maunds of rather inferior fibre. I had no good water to steep the jute in, hence the inferiority. I sold it to a *fureak* for Rs. 2. It cost me about Rs. 9 to grow jute on a *kani* of land, as per following details:—

	Rs. A. P.
Eight ploughs, including	
harrows	2 0 0
Weeding	2 0 0
Cutting	1 0 0
Carrying to the water, steep-	
ing, separating the fibre,	
&c.	3 0 0
Rent	1 14 0
Total	9 14 0

Jute is an exhausting crop and unless cow-dung is put upon the land that grows jute, the yield is

small. I grow *surasoo* and *kulai* on the jute lands in winter. As a rule, ploughs are not let out in this country; we hire labor for cultivating jute; the hire of labor is from Re. 1 to Rs. 5. In the case of men who have lands, but who have no ploughs or bullocks, the land is let in *burgha*, i.e., the man who owns ploughs, cultivates the land and gets a 10-anna share of the profit. We have also the changing labor system called *hamoroolla*, i.e., ten or twelve men form into one band and work in the fields alternately without receiving any fee. I grow the white jute called the *dholesthury*. The red jute, *lal nalia*, is grown in small quantities. The white plants yield better colored fibre, hence a large cultivation of this jute. We have no other kind of jute in this part of the country. There is no special rate of rent for jute land. Jute does not grow in the land which grows the *amun* rice crop, for it is low-land and water accumulates in it. Jute grows well on *doas* land. I will sow jute on only one *kani*, the price being low. *Ads dhan* grows on land intended for jute. I have only five *kanis* of *dogs* land, but only two *kanis* are really good soil. Ryots who have more lands sometimes make a change in the cultivation.

No. 48.—KODRUTOOLLAH MOLLAH (of Poalia),
CHURAMONI PRAMANICK (of Shekpore), GOBIND
MANDAL (of Bhatpara), and SHEIK MUNEE-
ROODDEEN, Furreedpore,—19th August 1873.

I, Kodrutoollah Mollah, own 20 beegahs of land, of which I have grown jute on two beegahs. A portion of the crop has been harvested and sold. The new jute has been sold at Re. 1 and Re. 1-2 per maund. I am selling the old jute at Re. 1-4 and Re. 1-3 per maund. The old jute is dry,—hence its greater price. The new stuff is moist, and therefore the low price. Last year I raised the jute crop on three beegahs. During the past season, jute was sold by us at 10 annas and 12 annas the maund, and this low price has brought on the reduced cultivation. Others in my village have also reduced the areas of their cultivation. Last year the yield was eight maunds per beegah.

I, Churamoni Pramanick, hold a tenure of 20 beegahs of arable land, a small portion of which, not more than a beegah, has been cultivated with jute. I grew jute last year on three beegahs, but in consequence of the very low market, I abandoned most of the plants on the fields and in the water. Hence the small cultivation this year. The little fibre I prepared was sold for nine annas the maund. The fibre of this season's crop has not yet been prepared. I got seven maunds per beegah last season.

I, Gobind Mandal, have a jumma of 16 beegahs of land, and I have grown jute on 1½ beegah, instead of 3 beegahs as last year. Last year's jute proved a loss to us, it having been sold at 8 to 10 annas the maund. The yield last year was eight maunds per beegah.

I, Sheik Munerooddeen, have a holding of 12 beegahs. I have raised jute crop this season on two beegahs. The stalks are being steeped, and I cannot tell what the yield will be. Last year I grew the staple on 1½ beegah, and obtained

about 12 maunds of fibre, which I sold at 8 to 11 annas a maund.

We sell jute at the Sydpore Hât, where we take it in small boats, and at home to the *paikars* who come to us.

We sell by the weight of 60 tolahs to the seer. We do not, as a rule, allow anything over and in excess of the maund, but the buyers take by the weight of 62 tolahs to the seer, and pay us on the calculation of 60 tolahs.

New jute is generally moist, and the buyers accordingly pay a reduced price.

We do not sell new and old jute mixed up together. We sell in hanks.

In our part of the district, about two annas of last year's jute remains unsold in the hands of the growers. The stock has been withheld in expectation of better prices.

In the season before last, we sold our jute at Rs. 2, 2-4, and 2-6 per maund. Last year the cultivation was the largest, and larger by about six-annas than the previous year.

Jute had been selling at good and paying price for three years before last year.

Jute has been grown for home use from time immemorial; but the cultivation for sale has been going on for the last eight or nine years.

Jute sold for the price we got for three years before last season, has been more paying than rice.

The drought at the commencement of the season dried up a good many plants upon high lands; the crop on low lands is fair.

We all grow *Bogi pôt*. People about our place do not grow *mesta* largely. It is light, green stalked jute, and the seed-pods are elongated. The seed-pods of *desi* jute are round.

Jute grows well on moist *doas* land, which is annually under water in the month of Srâvana. At the present moment jute plants on many fields are standing on knee-deep and thigh-deep water; a few fields are still perfectly dry. The fibre of the latter place is the strongest and the best.

Mesta pôt and *desi pôt* grow in this place in *bheels*. Jute land is not matured in any way; but jute cannot grow for more than two or three years on one and the same piece of land. Jute impoverishes the soil. We sow both early and late paddy. After jute, we grow mustard in winter, and after the removal of this crop, in January and February we plough the field for the next jute crop. We plough the jute land not less than three, nor more than five times. The paddy is ploughed once, twice, or thrice only.

In the month of Chaitra, a little before the sowing, we turn up the ground with *kodalies*, and thereby uproot and kill jungly plants. Ploughs cannot uproot jungles so well as *kodalies*.

Seeds are sown broadcast in all Chaitra and Vaisâkha, and sometimes in the early part of Jyaishttha, after a shower of rain. We then draw the ladder (*mô*) over the seeds, and cover them with earth.

When the plants are half a cubit high, we harrow the land in order to get rid of the grass.

We cut jute in Ashâdha and Srâvana, before the plants are in flowers. Plants cut at this stage yield finer fibre than those cut later.

We leave a corner of the fields with ill grown plants for seeds. These we cut in Kârtika.

We apply the sickle to the plants if they are on high lands. If they are in deep water, we pull them up.

We do not lop off the tops, nor cut the root ere steeping, but steep the plants at once in *bheels* and in tanks, and place plantain trees, bits of date trees and clods of earth upon them. In about eight to ten days the steeping is well done, and the fibre is extracted by the hand. It is peeled off from the root-end one by one.

The fibre is then washed in clean water and dried and tied up in hanks for sale.

Each family generally keep half a maund of jute for home consumption.

For the last two years, the rain water has been much accumulating in the fields of jute and damaging considerably the plants. The fibre consequently has not been very good. Accumulation of a large quantity of water in the jute field does no good to the plants. This year this has not been the case in our side, and the fibre is better than that of last two years.

We have not got to pay a special rate of rent for jute lands.

We all work on the field and use our own ploughs. Otherwise jute does not pay.

Supposing the crop is raised with hired labor and hired ploughs, the cost of cultivation per beegah is—

	Rs.	A.	P.
Six ploughings, &c.	1	8	0
Turning the ground with <i>kodalies</i> ..	0	4	0
Harrowing	0	4	0
Wedging expense	1	8	0
Cutting "	1	0	0
Separating the fibre, &c.	3	0	0
Rent	2	0	0
Two seers seed	0	4	0
Total	9	12	0

The black specks on the fibre are due to the joints where the branches shoot forth, also to under-steeping.

No. 49.—AMIROODER AND ABBAS KHAN (of *Shaestabad Deora*),—*Furreedpore*, 19th August 1873.

We have been growing jute for a long time; we grow both *bogi* and *deswal pôt*. In our part of the country *deswal* predominates; its fibre is better than *bogi*. We grow jute on *doas* land, being an admixture of sand and clay. The yield per beegah is six to seven maunds of fibre. We have not yet prepared fibre from this season's plants. Others have got the new fibre ready, and is selling at Re. 1-5 and Re. 1-6 per maund. We are selling old jute at Re. 1-2 and Re. 1-3 per maund. We sell jute at the markets where the *paikars* buy it. We sell jute by the weight of 80 tolahs to the seer. The growers in and about this place

have not got last year's jute, but petty dealers have some still unsold. The area of cultivation of jute this season has been reduced by more than half, owing to the low market last year. Last season our jute was sold at 6 as., 7 as., and 8 as. per maund and we suffered loss. Hence this reduced cultivation. The seed-pods of *bogi* are elongated. Those of *deswal* are roundish. We do not grow *mesta* in this part of the district. We do not pull up jute plants, we cut them with a sickle. We grow jute on rather high land, though in other years there is an accumulation of water, when the crop is harvested. This year there is no water. Jute is cut when the plants are getting into flowers, and sometimes before as we wish to avoid the water that accumulates in the fields as much as possible, for the portion of the plant under water rots, and is otherwise injured. The jute land is not in any way manured. We grow jute on the same field for two or three years running, but not longer; we then leave the old fields to *dhan* (late) and select new sites. Three years after we come back to those fields. The second year's crop is always shorter than that of the first year, and third year's still shorter. We have a small quantity of high land; hence we cannot select a new site every year. Jute does not grow well on very low lands. Jute plants are cut and steeped in stagnant water, and after 15 days or so, the fibre is peeled off from the thick-end one by one. The fibre of *desi pát* is stronger than that of *bogi*. The fibre of the *bogi* is longer. The cost of cultivating a beegah with jute and preparing the fibre thereof is as follows:—

	Rs.	A.	P.
Ploughings	2	8	0
Weeding	2	8	0
Cutting, separating, washing, &c.	6	8	0
Rent	2	8	0
Two seers of seed .. .	0	6	0
Total	14	6	0

We cut at the root close to the ground. The above expense is not incurred by those who work themselves on the fields; but by those who work with hired labor and ploughs. Want of good water is the cause of *deora* jute being of a muddy color. We cannot afford to bring the stalks to the river. We do not grow jute under advances. We do not sell the new and old jute mixed up together.

No. 50.—SHADECK MEER (of *Bojidpore*) AND SHAKER CAZEE AND FELOO SHEIK (of *Chur Moo-goorea*).—*Backergunge*, 21st August 1873.

I, Shadeck Meer, have a cultivation of jute on one beegah of land. I grow *sada deswal pát*. I have not gathered in the harvest. Last year I had the same amount of cultivation, and obtained eight maunds of fibre, which I sold at Re. 1-4 to Re. 1-8 per maund, at the *hát* of Gopal-gunge to the Madaripore *mahajans*.

I, Shaker Caze, have grown jute on one *kani* or three beegahs of land. I got 20 maunds of

jute last year, which I sold at Re. 1-15 the maund. This year the crop has not been out. I, too, have grown *desi pát*.

I, Feloo Sheik, raised jute crop last season on three beegahs and got only eight maunds of fibre. I fell ill, and could not attend to the gathering in of the crops and preparation of the fibre. Hence this poor yield. I sold it for 8 annas and 1 rupee the maund. This season I have grown jute on two beegahs of land. The stalks are being steeped. I grow *kassila pát*.

We do not grow jute under advances; we sell it at *hát* for cash.

Most people in our village have prepared this season's fibre, and some have already sold it for Rs. 2 per maund. Jute is purchased at the markets by the weight of 82 *tolahs* and 10 annas to the seer. At Gopalgunge *hát* nothing is charged by way of rent or *tolah*, but in Madaripore *hát*, where we also sell jute, one pice or two pice the maund is charged. About two annas portion of the last year's jute is still in the hands of the growers unsold.

In our part of the district, people grow *bogi pát*, *mesta pát*, *sooth* or *desi pát*. We know what is *nalita pát*. It is red-stalked jute, but we don't grow it. The seed-pods of the *bogi* are elongated, and those of the *sooth* or *desi* and *nalita* are globular. We mostly grow *sooth* or *desi*. *Bogi* grows well on high lands; *sooth* thrives on somewhat low lands. We cannot say what soil suits the *nalita*. *Mesta* grows in *bheel* land. *Desi* or *sooth* yields the best fibre. *Bogi* the next best. *Mesta* fibre has a fine color and gloss, but the fibre is coarse. We grow jute on clayey soil. A beegah of good *doas* moist land yields ten maunds of fibre. An average piece yields about three maunds less, and very poor soil's yield is three to four maunds. Jute is an exhaustive crop, and does not grow well for more than two years running on one and the same piece of land. People attempt to grow jute on it even on the third year, but the crop is really poor.

Jute lands are not manured in any way, nor are they as a rule annually flooded. Virgin lands produce the finest jute crop. In the month of Kartika lands destined for jute are ploughed for winter crops, such as mustard, *kulai* &c. In Falguna or thereabout, that crop is removed from the fields which are then tilled thrice or four times with ploughs and ladders. We do not turn the ground with *kodaties*. In the latter part of Chaitra, or the beginning of Vaisákha, seeds are sown after a good shower of rain which moistens the ground. It requires about 2½ seers of seeds to sow a beegah of land. The ladder is then passed on, and the seeds thereby covered with earth. When the plants are nearly a cubit high, the grass is weeded out from the fields. One weeding suffices. The plants are cut in flowers in *Srávana*, *Bhádra*, and *Ashwina*. Those that cannot afford, cut the plants in seeds; the fibre of such plants turn out to be coarse. We cut the plants close to the ground. We do not pull them up. The people who grow jute on *bheel* land pull them up. *Mesta* as a rule is pulled up. We then steep the stalks with tops

and leaves in river water, and in *bheel* water not less than breast-deep. After 7 to 15 days (the stalks cut in flower rot sooner than those cut in seeds) the fibre is peeled off by the hand from the thick-end one by one. The fibre is then washed in clean water and dried for two or three days. It is then tied up in hanks of five seers each, and in that state sold. Over-steeping leads to the weakening of the fibre and loss of its color; under-steeping makes the fibre woody. We attribute the black specks on the fibres to an insufficient steeping in certain points which turn out specky. In this part of the district, the best plants are left for seeds. The seed-pods are removed in Kartika. They are dried and thrashed; the seed-pods are then stored up. Jute is injured by *gora pocka* and by *beechnas* when young. *Gora pockas* eat the tops of the young shoots; cattle also eat up the tops of jute plants, but hail-stones break them. Excessive rain and drought are alike injurious to jute crop. Alternate rain and sunshine favor the growth of jute.

Jute cultivation has been carried on for home consumption from time immemorial, but it has increased within the last seven or ten years.

We grow jute on lands formerly given to indigo.

Both *aus* and *amun* paddy are grown on lands upon which jute has been grown for two or three years. After two or three years jute is grown again here.

Jute fibre in our part of the country is not deteriorating. Last year we had good jute. This year, on account of the drought, the sowings have been late, and it is feared the fibre will not be good.

The jute cultivation this year has been reduced by six-annas owing to the low prices of last year. Last year's crop was almost double of that of the year previous. Several people last year abandoned their jute, and some burned the stalks without separating the fibre. The jute reed is used as fuel; some sell it. The rates are not known to us. The cost of cultivating a beegah of land with hired labor and ploughs is—

	Rs.	A.	P.
Ploughing...	3 0 0
Rent	1 4 0
Weeding	1 0 0
Cutting, &c.	2 8 0
Separating, &c.	1 4 0
Total ...	9	0	0

We, as a rule, work ourselves on the field. A few do with labor hired by the month.

There are a class of men called *Kopaties*, who manufacture gunny from jute.

The accumulation of some little water in jute field when the plants are pretty high, does not injure the crop.

There is no special rate of rent for jute land.

Jute, if grown well, pays us better than rice.

No. 51.—BABOO GOLUCK CHUNDEA BISWAS, *Agent of* PITTAHER SHA; ROOF CHUND SHA, *Agent of* BREINDABUN SHA AND GOBIND CHUNDEA SHA; KEBAL KISTO SHA, *Agent of* RUTTON KISTO AND SURROOP CHUNDEA SHA; BHOGOBAN CHUNDEA SHA, *Agent of* KISTO KANTO AND RAM KANAI SHA; AND BROJO MOHUN KOONDoo for self, (of Madaripore),—Backergunge, 21st August 1878.

WE are traders of Madaripore and have been dealing in jute from 7 to 15 years. Formerly our business in jute was not so extensive as it has been from the Bengalee year 1271. We buy jute from the growers and from the *furahs*. We buy in the *hals* of Madaripore, Gopalgunge, Borhangunge, and Angaria; and after tying the same up into large hanks of 1 maund 5 seers, to 1 maund 15 seers each, forward them to Calcutta where the *aratdars* sell them for us, charging commission of 5 pice and 2 pice, on account of payment to the people of the buying firms, for each maund of jute sold. Sometimes the *aratdars* give us the estimated value of jute consigned to their firms in anticipation of its sale, and when this is done, they charge interest at the rate of 12 per cent. per annum. We do not receive any advances from the *aratdars*. The jute forwarded from this place is called *Deora pdt.* In days gone by there was a large jute mart at Deora village; now-a-days it is a small place. Still, to this day, all jute sent from the neighbourhood of Deora goes by that name. We buy jute grown in Furreedpore and Backergunge only. We buy *mesta pdt.*, *bogi pdt.*, and *deswal or desi pdt.* We prefer *bogi* to other fibres. The fibre thereof is stronger and longer than *desi*. The *desi* is woody at root, and not so long as *bogi*. *Mesta* has a fine color and gloss, but the fibre is coarse. We do not assort jute but mix up the three kinds together and forward to Calcutta. We send jute there in country boats; each maund costing 5 annas including all expenses. Our boats are not insured. New jute was brought to the market in Sravana last year, and it is being bought by us for Rs. 2-2 to Rs. 2-4 per maund. We buy by the weight of 82 tolas and 10 annas to the seer. In Calcutta, jute is sold by the weight of 80 tolas to the seer. The ryots at times of demand bring wet jute to the market. We then buy it at reduced price, dry the jute and tie it up in hanks. *Deora* jute has not been deteriorating, but owing to the drought in the early part of the season, the fibre is not so good this year as that of last year. Last season in the early part, jute was sold here at Rs. 2-2 the maund, but later on, it fetched 12 to 14 annas only. Jute trade is very brisk in the months of Sravana, Bhadra, Aswina, but this year the sowings have been late and we did not do good work in Sravana. Jute boats go *via* Koomar river, Khalia Khal, Chunder Bheel, the Muthoo Muttee, Khoolna, and Soonderbun rivers. Steamers do not stop at our place. After October the boats pass by the Aryalkhal, Fansiatol Khal, Gournuddee, Bolessur, and the Soonderbuns. We do not send jute to any other place except Calcutta. In other years about two lacs of maunds of jute

are sent to Calcutta from Madaripore, but last year about three lacs of maunds were forwarded. Last year's cultivation was nearly double than that of previous years. This year, the cultivation has been reduced by 10-annas. Last season, the cultivation was so large as to be beyond the control of the growers, some of whom at last abandoned jute on the fields. We are still buying old jute for Re. 1-11 and Re. 1-12 the maund. About 2-annas of last year's fibre is still unsold. We purchase jute for cash. We do not make any advances. We do not lend money to the growers. Jute plants in *bheela*, and *mesta* everywhere are pulled up. Upon high lands jute is cut.

No. 52.—ALI MAHOMED MERDHA (of Benodepore); PANJOO SHEIK (of Hatpara) Sundep; ASALUT KHAN (of Nowhala); OMEDALI (of Paloordi); AND MOOLAM KHAN (of Rajout),—Backergunge, 21st August 1873.

We all grow jute, each of us cultivating from one to two beegahs of land with jute. We have grown both *mesta* and *sooth* or *desi pát*. We have already sold new fibre from Rs. 1-12 to Rs. 2-2. In the last *hát* some of us sold jute at Rs. 2-2 the maund. We have got 5 to 6 maunds of fibre from one beegah of land. *Sooth pát* grows on somewhat high lands, and *mesta* grows better on low lands than on high land. We do not grow *bogi* jute; it grows on high land. We do not mature jute lands; but they are renovated by the flood water which annually covers the same. We grow jute on *doas* land as well as clayey soil; *doas* land suits jute the best. The jute plants are in waist deep water when they are cut. Jute as a rule is cut in flowers, for if cut later, the fibre becomes coarse. *Mesta pát* is pulled. Jute is cut even if it is in deep water. After cutting we steep the stalks in stagnant water in bundles with leaves. The fibre is then separated by peeling it off the stick from the thick-end. The fibre is afterwards washed in clean and running water, and dried and tied up in skeins. We have all grown less jute this year than last year. The reduction in cultivation in our village has been 12-annas. Last season, the cultivation was greater by 4-annas to 6-annas. Last season we sold jute at 10 and 14 annas per maund; old jute is sold for Re. 1-2 the maund. The fibre of *Sooth Pát* is fine and strong; that of *Mesta*, though of good colour, is coarse. We sell jute at *hát*s by the weight of 82 tolahs and 10 annas to the seer. It requires 10 seers of *mesta* seed for sowing a beegah of land, and 2 seers of *sooth pát* for that quantity of land. The seed-pods of *sooth pát* are globular, and those of *bogi* are elongated. In winter, we do not grow any crop upon lands destined for jute; the preparation of the soil commences in Māgha, and seeds are sown broadcast in Chaitra and Vaisākha after a shower of rain. In Ashādha, Srāvana, and Bhādra, jute plants are cut and pulled up. Jute grows well on one and the same piece of land for two years, but the yield is much smaller on the third year. After which we grow *ads* and *amun* rice on that land, and select new grounds for jute. After 3 years

we again raise jute crops thereon. We ourselves work in the jute field and use our own ploughs. Those who employ hired labor and ploughs, and buy seeds incur the following expense:—

Ploughing	...	...	...	2	0	0
Weeding grass	...	...	...	2	0	0
Cutting jute	...	...	...	2	0	0
Separating, &c.	...	...	...	2	0	0
Rent	...	...	...	2	0	0
Two seers of seed	...	...	...	0	8	0
Total	..	10	8	0		

We plough the jute land, we do not turn it with *kodalies*. Jute in our part of the country is not deteriorating, but it is not improving. We do not know how to improve the manufacture of fibre.

No. 53.—ZUHERRODEEN (of Chūr Coomar),—Mymensing, 3rd May 1873.

I hold a tenure of 42 *kanis* out of which I cultivate three *kanis* with *italia* jute. In the ensuing season I shall only cultivate two beegahs. I have sold all the jute that I produced last season. I sold at from Re. 1-8 to Rs. 2-10 per maund. I sold at the latter price at the commencement of the season. I prepared three kinds of fibre; the *mahajuns* bought all round without reference to quality. My outturn for the season was ten maunds. The three kinds of jute were produced thus—at first water was plentiful and good, and the jute was therefore good, later on water got scarce, and the quality deteriorated. I only sow one kind of seed (*dhalsoonder*). I sowed 7½ seers in three *kanis*. I cultivate *chur* land, which I manure with cow-dung. My land was not inundated last year. This year I shall cultivate jute on a different piece of land, on some old indigo land. It does not answer to grow jute for two years on the same soil. Jute is an exhausting crop, *ads* is less so. I have sown seed for this season. I take my seed from the best plants. I cut my jute mostly in Bhādra, and also Aswina and Kārtika. I cut according to the supply of water for steeping. I can't steep my jute in the river as it might be washed away. I cut the plants just when the seed-pods appear. The plants were in the proper state for cutting in Bhādra. If I let the seeds ripen, the fibre will be coarse. After cutting, those who can afford steep the bundles at once; those who cannot afford the labor stack it in the field, and take it away gradually. Steeping at once or stacking makes no difference in the quality of the fibre, but if steeped at once the fibre separates easily: when cut at the proper time, it only takes 10 days to steep, but if later, 18 to 20 days.

I take advances from the *mahajuns* and repay them in jute, mustard, *kulai*, &c. The *mahajun* takes my jute without reference to quality. A large or small proportion of good or bad makes no difference in the price. The *mahajun* sells the jute and reimburses himself. I believe my *mahajun* suffered a loss this season; last year he made a

good profit. I could have sold my jute in the market at a better price, but I did not like to displease the *mahajun*, as I have yearly transactions with him. If I grow finer jute I can sell to the *furaks*, but only with the sanction of the *mahajun*. It is difficult to tell with certainty the cost of cultivation, but in round numbers it may be—

	Rs.	A.	P.
Rent	0	10 0
Six ploughings	1	8 0
Two to three harrowings	0	8 0
Hand-weeding	4	0 0
Cutting	1	10 0
Stacking and steeping	0	10 0
Preparing the fibre	3	0 0
Drying and bundling	1	0 0
Total	12	14 0

I cultivate myself and hire labor to help me. I lost by my jute cultivation last year. In favorable seasons I get five to six maunds per beegah, and that pays me. Jute is not like rice, which we can eat, and with regard to it we can be independent of dealers and panics in the market. At times rumors are spread at Kaligunge that the trade in jute is stopped, then we get afraid and sell our produce for whatever it fetches. I have cultivated jute almost all my life on a small scale, and largely for the past few years. The price in 1871 induced the people to extend the cultivation. I doubled my cultivation and my neighbours did so also. We reduced the cultivation of paddy.

No. 54.—SHAMAWOOLLAH SIRCAR (of Chur Therleccia),—Mymensing, 4th May 1873.

I hold a tenure, containing 64 *kanis* of land, of which I grew jute on seven *kanis* last year.

The yield was 27 maunds of fibre which I sold to Mr. David for Rs. 1-8 per maund all round. I grew *mettee pát* on both *chur* and *bari* lands. I did not grow any other kind of jute, but I have sown the seeds of *dhaleshur pát* this year. The *mettee* plants are red, and the leaves not of so light green a color as those of *dhaleshur* jute, the seeds being of a greenish color. Mr. David of Dacca for whom I grow jute does not, as a rule, take any other jute from my village except *mettee*. I borrow money from that gentleman for the purpose of trading, hence the necessity of cultivating only the variety of jute that suits Mr. David. I manure the land destined for jute with cow-dung in the month of Falguna. The yield is not good when the land is not manured; my land is not flooded during the monsoons; I grow jute with hired labor and the cost is as follows:—

	Rs.	A.	P.
Ploughing a <i>kani</i> of land	5	0 0
Three weedings...	5	10 0
Ladder	1	8 0
Harrow	0	8 0
Pulling up weak plants	0	12 0
Cutting and steeping	2	4 0
Separating fibre and drying	2	10 0
Tying	0	6 0
Reft	0	11 0
Total	19	5 0

Last year's crops entailed a loss on me; I have, therefore, reduced my cultivation to five *kanis* this year, and I intend growing the white jute more largely. I sold in the season before last at Rs. 3-4 per maund. I keep three servants by the year and pay them Rs. 18 each, besides food. These servants not only attend to the cultivation of jute, but to that of *ade*, and in *Srávana* and *Bhádra* to that of winter paddy. They also attend my domestic work. Sometimes, when pressed for work I employ extra labor. *Dhaleshur aís* is more in demand and more valuable than the *mettee*. I repay Mr. David in jute; he does not charge me interest. Jute, though an expensive crop, is somewhat more profitable than *aís* rice. The land I hold does not suit the late rice crop well. I also buy jute from the villagers. I purchased some 5,000 maunds of *mettee* for Mr. David; I purchased it at Re. 1-8 per maund, and sold it for Re. 1-10. We use the leaves of both *mettee* and white jute as a pot-herb. The *mettee* leaves are far more tasty than the *dhaleshur*. Mr. David's Baboo purchased last season about 25,000 maunds of *mettee pát* from our village and from the neighbouring villages. I steep jute in a lagoon of the Brahmaputra, and keep it there for 12 to 14 days; I then hold the plant in my left hand and peel off the bark or fibre by the right hand. Two days' drying is quite enough for the jute. If the *beechas* attack the plants, the fibre gets specky. I steep the plants as soon as I cut them. In this way I get good fibre. I peel off the fibre from the root-end. Jute is an exhausting crop, and unless we manure the land well, it will not produce good crops for two years successively. People therefore generally try to get new land annually, and never cultivate jute on the same ground for more than two or three years successively.

No. 55.—HOSHIN SHRIK (of Beroe),—Mymensing, 5th May 1873.

I am a cultivator by profession. My tenure consists of 14 *kanis* of land, upon which I grow *ade* and *amun* rice, jute, *surroo*, and *kulai*. I grow jute, *surroo*, and *kulai* on one and the same land. A portion near my homestead is manured with cow-dung. The parcel that lies at some distance is not so manured, for I cannot afford to carry the manure so far from home. I do not work on the fields myself, but my brother and my servants do. I grew jute on two *kanis* of land last year, and got 8 maunds of *mettee* and *dhaleshur pát*. I grew half of the one and half of the other on these two *kanis*. I let half a *kani* in *bhag*, i.e., the man who had the *bhag*, had the growing of the crop, and he gave me half the produce. I sold *mettee pát* at Re. 1-1 per maund at Dutt's Bazar to a *furak*. The white jute was sold in the same way at Re. 1-10 maund. In *Vaisákha*, after a shower of rain, we sow the jute seeds and cut the plants in *Bhádra*. The reaping is commenced when the plants are in flower; that is, the proper time for cutting, in as much as the fibre obtained from such plants is generally very fine. I stack

the plants on the fields for two or three days for the purpose of hardening the fibre. I steep the jute, in my own tank for 10 or 12 days, when I peel off the bark from the root-end. I grow jute on high *doas* land, which is used in growing *ads* rice. The cost of cultivation per *kani* is as follows:—

	Rs. A. P.
Eight ploughings or sixteen ploughs, including ladder once after each plough ...	4 0 0
Three barrows ...	0 12 0
Three weedings—	
First weeding, 16 men ...	3 0 0
Second „ 10 „ ...	1 14 0
Third „ 8 „ ...	1 8 0
Picking and pulling out weak plants, 6 men ...	1 2 0
Cutting, 8 men ...	1 8 0
Removing to tank, 4 men...	0 12 0
Separating the fibre, 6 men	1 2 0
Drying and tying, 3 men	0 9 0
Rent ...	0 12 2
Total ...	16 15 2

Last year the crop entailed a loss on me. I have sown jute seeds on about a *kani* of land this season. I employ laborers both by the year and by the month. I do not grow jute under advances. I have *ads* cultivation. The men attend to both crops. I sow *sursoo* on jute lands. I have been cultivating jute these 3 years, and have been growing the crop all along on one and the same land. Jute is an exhausting crop. I manure the jute land in Vaisākha. I have seen jute grow on low lands, but the water which naturally accumulates there has to be drained off. There is no special rate of rent for jute lands. The *ads* land rate is the rate as regards the jute lands. It does not pay to grow jute, now the market has gone down so much; I have therefore reduced the cultivation. My neighbours are doing the same. The *beechas* destroy the plants when the weather is cloudy, but not rainy.

No. 56.—SHEIK MANOULLAH (of Chur Bissonath-pore).—*Mymensing*, 5th May 1873.

I am a cultivator, and cultivate 20 *kanis* of land with *ads* paddy, jute, and mustard. Last season I grew the *nalua* (jute) crop on 5 *kanis* of land and got 29 maunds of *dhaleshur* fibre, which I have sold at Re. 1-2 and Re. 1-8 the maund, partly to itinerant traders and partly to the *jureahs* in the *add*. In the month of Kārtika I was offered Rs. 2 the maund, but I would not sell it then in expectation of a higher price. I was disappointed, for the market fell and the price went down. I grow jute on *chur* land, which I annually manure for that crop. It is not necessary to manure the land destined for *ads* *ghan*. I grow what is called here *ads* *pdt*. I sow the seeds in Vaisākha, and cut in Aswina when the plants are in flower. My other occupations, however, do not allow me to finish the cutting in that month. I reap a portion

of the crop in Kārtika, and then the plants run to seed. The fibre is finer and whiter if the plants are cut when in flower. It is coarse and greyish if cut when in seed. I steep the plants in the water of the Brahmaputra. The fibre of plants cut in flower separates in 10 or 12 days, that of plants reaped in seed after 17 or 18 days' steeping. Stagnant water rots the plants quicker than running and clear water. I have sown for the coming season on three *kanis* of land. I would have grown *nalua* on five *kanis*, but the landlord stood in the way, and demanded enhanced rent. As a rule I do not grow jute on one and the same land year after year. Jute being an exhausting crop, I try to get new lands yearly, and come back to the old land every second or third year.

I and my family work on the fields, and very seldom do I employ hired labor. It costs me about Rs. 9 to grow a crop of jute on a *kani* of land. The following are the details:—

	Rs. A. P.
Rent of one <i>kani</i> of land...	0 8 0
Ten ploughings and passing the ladder ...	2 8 0
Two harrows ...	0 8 0
Two weedings (once the grass is weeded and at another time bad plants are pulled up), 16 men...	2 0 0
Cutting and removing, 10 men ...	1 14 0
Separating fibre, 9 men ...	1 11 0
Drying and tying, 4 men ...	0 12 0
Total ...	9 13 0

Sometimes I employ hired labor and each man costs me 3 annas per day. I stack the plants in the field for a day or two. The exposure brings on the decomposition sooner. I separate the fibre by peeling it off from the root-end. In other years I made something out of the *nalua* crop, but not so last season. I grow mustard in winter on the jute land. Jute has been a profitable crop except last season. I cultivated jute on four *kanis* of land in 1278, and sold the fibre for Rs. 72; the yield was 24 maunds. In my village the ryots will cultivate less jute than last year. No *mesta* or *mettee* *pdt* is grown in my village. In the month of Jyaishtā and Ashādha, if no rain falls, a kind of insect called *beecha* eats up the young shoots and leaves, and to some extent destroys the trees. Fall of rain remedies this evil. Flat *doas* land is the best soil for jute. Too much rain stunts the growth of jute, moderate showers and sunshine help its growth. It is easier to plough the *doas* *chur* lands than the *bari* lands.

No. 57.—MAHOMED JAN (of Kuringunge).—*Mymensing*, 6th May 1873.

I have been in the jute trade for 35 years in Kuringunge. The exports from this place were about 60,000 maunds; more would be sold, but the river Nursunder, on which the bazar is situated, closes up in November. The jute is then taken to a village, called *Kajla*, which stands on the same river lower down, where there is water

carriage all the year round. The principal villages which supply what is called Kuringunge jute are Nowgong, Sakoa, Kusardees, Panchaahona, Doobree, Goadiggee, Hatkoliha, Cherang, Singapore, Kagree, Simoolbank, Komlochock, and others, within a radius of upwards of a day's journey, say 30 miles, and even from the western border of Sylhet. The villages are generally situated on the sides of the rivers Megna, Dhunoo, Nursunder, and Goracotta. The jute is usually brought in boats carrying 50 to 100 maunds each by the *fureahs*, who are themselves the boat-owners and *manjees*. It is never brought on carts or hackeries. The jute is not sold in the boats; it is removed to our godown. The jute is brought in *morahs* and *latchees*. I buy the jute for Mr. David of Dacca, and Baboo Shuntaram Shaha and Bhurut Shaha, who live at Shabar, in the sub-division of Maniekunge, zillah Dacca. These last-named take the jute direct to Calcutta. Afterwards their agents make it up into drums. The cost from Kuringunge to Calcutta is Rs. 35 to Rs. 50 per 100 maunds. I also sell to itinerant traders. The Nursunder dries up in two or three places; a length of about two miles is dried up near Kuringunge and at other places also. It would be of advantage were the river opened out; it would require three to four feet to float the boats.

From Kajla the jute goes *cid* the Nursunder into the Dhunoo river. The same description of jute goes from Kajla as from Kuringunge, and probably about 22,000 maunds. Even after the river is closed at Kuringunge small quantities come in on *hât* days, which is brought by the natives in small boats. (Kuringunge is much larger than Kajla, it is distant from that place six miles.)

The reason why the jute from this part is so good is that there is a large amount of *chur* land, and fresh soil can be chosen. They also have plenty of river water in which to steep their jute. This jute is grown on low flat land which is annually submerged. Mustard and winter crops grow in the higher lands; on the low-lands nothing grows but jute. In August this land is submerged. As the water rises they cut the jute which is then in flower. If the water rises too early the jute is spoilt, as it gets a bad color, and roots shoot out up to the distance the water reaches it. It is then very inferior, but it is not abandoned. I have never known the floods so high as to entirely destroy the jute.

There are two kinds of *pât-baua* and *dholonto*, both are white jute. The latter variety runs into seed sooner than the former, *i.e.*, in the beginning of August; one kind is as good as another. *Mettee* is not grown here; *mesta* to a small extent, and is mixed with jute. A corner of the field is left for seed, *i.e.*, the higher land, which is not likely to be submerged. We leave the smaller plants for seed, and after picking, we steep the plant and produce a low kind of jute. I do not think Kuringunge jute is deteriorating.

The price of this year for the best jute was Rs. 2-4, and for the worst Rs. 1-8. Last year it was Rs. 3-8. The quality of this year was not inferior, but the market last year was so active that all kinds sold. The year before it sold at

Rs. 4. All last season's jute has been sold, what little comes in is being used for home consumption. The seed is already sown, and the plants are about a foot and a half high. I hear the cultivation will be less this year. The low prices have damped the ardour of the growers. Had the high price continued, more land would have been cultivated. There are large tracts of land, simply jungle, which would do well for jute. This jungle consists principally of reeds and bulrushes. Last year was the largest cultivation I have ever known. On the higher lands I know manure is put, but on the flooded lands none is needed. I make no advances. I take none. Some gunny bags are made at Gorodea by the class of people called *kopâlies*, and these are brought to Kuringunge for sale. Each bag is sold at 3 to 3½ annas; they are bought by the ryots, &c., for keeping paddy; they are made of the best jute. It is more profitable to sell bags than raw jute. About a seer to a seer and a half go to a bag large enough to hold one and a half maund. One man can prepare the thread and make a bag in three hours; men and women manufacture them. The *kopâlies* have no other trade, and no other class here makes them in this part.

If prices rise, the cultivation, I am sure, would increase. For the past ten or twelve years the increased cultivation has been very marked. There are roads in certain places, but there are no carts or pack-bullocks. I get a commission of Rs. 2-7 per hundred maunds from Mr. David and the Shahas, and from the itinerant trader half an anna a maund, or Rs. 3-2 per 100 maunds. I charge less to my large and regular customers; they bring cash. I get no other remuneration.

No. 58.—KOLUNDER KEAN (of Boira-Gopâ-junge),—Mymensing, 14th May 1873.

My holding is 8 *arrahs* (15 *ootahs*=1 *arrah*); of which I grew jute on one *arrah* last season and got 13 maunds of jute, which I sold partly to the itinerant traders, who yearly come here from Shabar and Serajgunge, and partly to the *beputies* here for Re. 1-10 the maund all round. I grew white jute; we, in this part of the district, call it the *nahû* crop. I grow jute on *chur* land, which is not flooded from year to year. I do not manure the land. I do not grow jute for two consecutive years on the same land—jute being an exhausting crop. I select new land and come back to the old land two or three years after. I shall sow *aus* rice on the land which grew jute last season. The land upon which the jute seeds are being sown during the present season, mustard will be grown in winter. I intend to grow jute this year on one *arrah* of land. It is probable that ryots will reduce the cultivation this year, as the prices they received last year for their jute were low. We commence tilling the land destined for jute in the month of Aashraan, the land is ploughed twice. If it is land that will grow mustard well, it is ploughed up 10 to 15 times, and in the latter part of the month *sursoo* is sown. Some people sow in the beginning of the month. In the month of Fâlguna the mustard is cut. From

that time to the time of sowing jute seeds the land is ploughed up ten times, and if necessary as much as 15 times. In the month of Vaisākha after a fall of rain, i. e., when the ground is moist, I sow on a clear day seeds broadcast; each *arrak* takes four to six seers. On that very day the *moi* or ladder is passed on the ground, and a thin crust of earth covers the seeds. In eight or ten days the seeds germinate; when the plants are seven to nine inches high the harrow is passed in order to break the clods of earth; when the jute plants are one cubit high or little more the grass is weeded by the hand. We do not, as a rule, weed out the grass more than once, but if grass grows again the process is repeated; the harrow is passed twice or thrice; four days after the first harrowing the second harrowing takes place, and some times a few days after the third harrowing is done. After the fall of rain a kind of thick cream deposits itself on the land, and the harrow is passed on in order to remove this; when the plants are two and a half hands high, if they are pretty thick, the weak and ill-grown plants are pulled up and thrown away. In the month of Srāvana or Bhadra, when the plants are in flower, I commence cutting them. The fibre of the plants cut in flower is finer than that of the plants cut in seed, but the yield is not so large. At the latter part of Bhadra and in Asvina the plants run into seed. I cut some then; I do this because I get more jute from these plants. If the yield of a plot of land be eight maunds when the plants are cut in flowers, the outturn, in case of the plants running to seed, will be 10 maunds. After cutting the plants the tops are lopped off, and the plants are tied into bundles and steeped. Those who can afford, steep the plants at once, those who cannot, keep the stalks for two days or so in the field. In my case the plants are stacked in the field for some two days. This is done when we are particularly busy in looking after rice, chilli, and sugarcane, and consequently cannot get time to steep the jute at once, although we all know that steeping soon after cutting does good to the fibre. By keeping in the fields the plants are hardened, and do not rot soon.

The fibre of the plants cut in flower, separates sooner than those in seed. The fibre is then peeled off by the hand from the thick-end; this fibre is washed in the same water in which it was steeped, or, if the water be very dirty, in clean water. It is then hung up on bamboo scaffolding, and dried for two or three days, and then tied up in skeins. I steep jute in a *bheel* or tank or in a river where there is no stream. Jute does not rot in a running stream. In the case of land upon which no winter crop is grown the land is ploughed twice in Aushra, four times in Pous, once in Māgha, four times in Fālguna, thrice in Chaitra, and twice in Vaisākha. The cost of cultivation per *arrak* is Rs. 8 or Rs. 9. I do not plough myself, nor is it done by any member of my family. I have servants employed by the year who work. We get here four ploughs to the rupee, sometimes three. The wages of labor are from three to five annas per day including food; I have my own ploughs and bullocks. The seed-pods of the jute I grow are

globular, the stem is white not reddish; I keep seeds of any plants I like. Those of small and those of large plants are preserved by me for next year. I dry the seed-pods for six or seven days and store them. Seeds are not sold here, so I cannot tell their price. Both rain and sunshine are necessary for the growth of jute plants; too much rain stunts their growth, and they turn out red; too much heat also stunts their growth and nearly kills them. *Beecha*, a kind of insect, attacks the jute plants and eats up the leaves and young shoots, whereby the plants are damaged a good deal. They appear in the month of Srāvana and Bhadra when there is no rain. Too long steeping weakens the fibre and spoils the color; under-steeping causes runners and bark to stick to the fibre. Last year jute grown by me gave me a profit of only Rs. 5 or Rs. 6. I also buy jute and sell it to the *mahajuns* on my own account. Last season I purchased 800 maunds of jute at prices varying from Re. 1-4 to Rs. 2 the maund. I bought *sada pat* and sold it at various rates up to Rs. 2. Last year's trade of jute did not make me a loser, but I got no profit. The *mahajun*, who purchased from me, has sent the jute to Calcutta. Jute is sent from this place in native boat at a cost of Rs. 50 to Rs. 60 per 100 maund. I purchase jute for cash from the growers who bring it on their own heads to the *hāt*. I borrow money from the *mahajuns*, and if they want jute I give it to them at market rates. I pay interest at Rs. 2 and Rs. 3 per cent. per month. I make no advances to the growers. About 40 to 50 thousand maunds of jute are imported to this place; all this is bought up by the *mahajuns* and sent to Calcutta, sometimes all the way by native boats and at other times in boats from this to Naraingunge and thence to Calcutta by steamer. All this jute is brought to this *hāt* for sale, and people bring them sometimes in small *dingies* and sometimes on their heads. We do not buy jute from the *furachs*. There are some fifteen *bearies* like myself at this place. *Mettee* and *mesta* are also brought up here sometimes. Jute comes from villages lying at a distance of three to four hours' journey. *Mettee* grows on low lands, as also *mesta*; *mettee* fibre is reddish; *sada* jute is finer and in greater demand than *mettee* or *mesta*; *mesta* is brought to this market separately; *mettee* was brought last year in very small quantities at Re. 1 and Re. 1-4 the maund; *mesta* was bought and sold at the price of the white jute; we mix up *mesta* in jute and sell; we get very little *mesta* here. Last season's cultivation of jute was larger than that of any previous year. Small gunny bags capable of holding 1 maund and 10 *punaries* of grain are made by *kopālies*, and brought to the market for sale—some 50 bags are brought to every *hāt* for sale, and purchased for domestic use; they are not exported. Gunny-bags are made of all kinds of *pat* and *mesta*. I do not know the particulars about the manufacture of gunny-bags. I am not an *aradār*; I do not sell jute through an *aradār*. Shumboogunge, in this district, is the largest place for the purchase and sale of jute. The fibre is called by the people about here *pat* or *koshka*. Jute fibre has of late been somewhat deteriorating,

and the causes of this are want of good water in the neighbourhood of the cultivators, and the increase of cultivation by ryots who cannot afford to look after it well. The *pât* brought to this place is not so good as that from Kurimgunge or even Backrabad; the fibre here is rooty. I cannot explain the cause of black specks on the fibre; I ascribe this to the *beechas*. Those parts will never rot where they deposit themselves; they will turn out specky.

No. 59.—BISSESSUR CHUCKERBUTTY, Agent of DEBENDRO NATH AND BENODE LAL SHAHA (of Shumboogunge),—Mymensing, 9th May 1873.

We do business at Shumboogunge in the district of Mymensing. We deal in jute. We purchase jute and send to our firm at Calcutta where our agents sell it to the shippers. I am in the service of my employers for 20 years, and before that time my principals have been doing the jute business. Annually we buy and send to the Presidency 15 to 25,000 maunds of jute. Last year I purchased about 22,000 of maunds at prices varying from Re. 1-8 to Rs. 2-12 the maund; we, as a rule, purchased good white jute; the red and dark colored jute, which is the inferior kind was also bought, but in small quantities. I do not buy *mettee* or *metla pát*. I buy from the grower or from the *furcah* who purchases it from the grower on market days. The *furcahs* at first make a contract with us on sample for the supply of 10 to 300 maunds of fibre at fixed prices; they gradually bring the jute to us. The *furcahs* take an advance from us at the time they make the contract; we do not charge any interest; we buy at the rate fixed at the time of contract. Should he fail to fulfil his contract, he is made to give back the money with interest at half or one anna to the rupee per mensem. It also happens that in case of the *furcahs* not being able to supply to the *mahajuns* the quantity for which advances are made, the party making the advance recovers the money advanced with the profit he would have made had he been supplied with it. When we buy from the ryots or growers themselves we do so at *hâts*. The ryots do not, as a rule, bring the entire yield of their crop in one *hât*; they bring in small quantities from half maund to one and a half maund every *hât*; we pay them cash, where-with they purchase oil, salt, fish, &c. Annually I and other firms purchase at Shumboogunge 1,50,000 to 1,75,000 maunds of jute; we send a portion of this to Serajgunge, a quantity to Naraingunge, and a quantity to Calcutta; we send jute in native boats to Naraingunge and Shumboogunge, and sometimes to Calcutta; but oftentimes our export goes in steamer from Naraingunge. About 20,000 maunds go to Naraingunge and as much to Serajgunge, the rest is forwarded to Calcutta. Some years we do not send any jute to Serajgunge, what little we sell at these two places we sell through *araddars*. At Serajgunge we have a branch firm of our own. During the rains we send jute by the Brahmaputra and Jamoona to Calcutta at Pathoorisghatta; during other

seasons it is sent *via* Naraingunge; the Naraingunge route is the quickest. In these months the Brahmaputra is not navigable for large boats, and we have to send jute in small boats. It costs from six to nine and ten annas in sending a maund of jute to Calcutta, independently of sundry other expenses, such as cart-hire from Shumboogunge to the river-side which is three to six pice the maund, &c. We generally ship our jute at Boeah, which is two hours' journey from Shumboogunge, and at Nuseerabad; we make up the drums here and send to Naraingunge, Serajgunge or Calcutta; we assort the jute before making up the drums; we pay different rates for different kinds of jute. Sometimes the ryots bring wet jute, which we dry before tying up. I have observed that jute is gradually deteriorating, and this is owing to want of good water. Last season's jute was not so very good as that of the season before. Last season the import of jute was the largest ever known, and the cultivation was the largest also. People of Atteah and Cagmari come to Shumboogunge, put up with the *araddars*, and buy jute from the *furcahs* through the *araddars*. The *araddars* charge two pice and an anna per maund as their commission; we do not buy through the *araddars*. Some 15 *beparies* like our firm deal in jute, and send it to the three places I have mentioned. Jute comes to Shumboogunge from villages lying within about a day's journey from our place. People bring jute on their heads and in boats. The import of the season before last may be estimated at 1,50,000 maunds. The weight by which jute is bought and sold is by the seer of 84 tolas and 10 annas sica; we store jute in kutcha godowns upon bamboo platforms. I have not got any quantity of last year's stock unsold, but other *beparies* have about 1,000 maunds yet unsold. Some of the grower have kept a portion of the yield of their respective jute crops in hopes of getting a better price. I cannot say what quantity has been so kept. The jute imported here is equal to Kurimgunge *pât* which is brought here by *furcahs* in boats. The import is brisk here from the latter part of Bhâdra month to the end of Mâgha month; even now the people sell two to four maunds every *hât* day.

No. 60.—SHEIK SHACKER MAHMOOD (of Jailkhanar Chur),—Mymensing, 10th May 1873.

I am a cultivator, and own a holding of 8 *poorahs* of land, out of which I grew jute on 22 *cotahs* last season. The yield was about 24 maunds, which I have mostly sold for Re. 1-8, Re. 1-14, and Rs. 2 the maund. I have kept some fifteen seers of jute for home use. I grow the jute called *pechinatia*. The land on which I grew it was *chur* land which I manured with cow-dung supplied by my own cow-house. In this part of the country, we do not buy manure, and except cow-dung, no other kind of manure is used. With all this manuring, jute does not grow well on the same land for three consecutive years. Every third year we select new lands for jute, and grow *aus* rice on the old land. My land is partly very good, and the portion well ploughed

up gives fibre at the rate of 16 maunds per *poorah* in the first year, when no manure is needed. In cases of the *kheel* or waste-land in the first year, the same land, even if well manured, will not yield more than 12 maunds. We commence tilling the land in Bhādra and Āswina. In Kartika, mustard is sown. In Māgha the mustard is reaped, the land is then again ploughed 8 or 10 times, and the seeds sown in Chaitra or Vaisākha after a shower of rain. This year, owing to the want of rain, the sowings have been late. In Bhādra, Āswina, and Kartika, and sometimes in Śrāvana, the jute is cut. The best time for cutting jute is when it is in flower, and we commence reaping at that time; but having to attend to the *ais* paddy crop, and to the preparation of the ground for the mustard, I cannot manage to confine my attention to jute solely. I have therefore to cut some plant when in seed. The fibre which these plants yield is necessarily coarse, and it takes a longer time to steep. It is impracticable to steep jute in running stream. It is difficult to keep the plants, and they take a very long time to rot. I steep the plants in the beds of river where there is no stream; 10 or 12 days are sufficient to rot the plants out in flower, but it takes about 20 days to rot the plants when cut in seed. The fibre of plants cut in flowers is fine and silky, but is heavier in yield when cut in seed. I tie up the plants in bundles, say of 80 or 100 in each bundle, and lay them in water, and place upon them tops of jute plants with leaves, which I remove ere steeping; upon these I place clods of earth. Some eight or nine days after, I commence examining the bundle then being steeped to find out whether they are fit for separation or not, and when fit, I peel off the fibre from the root-end, and then wash the fibre in the water where the plants had been steeped; but if the water has been discolored, I wash it in fresh water, and then dry the fibre for a day or two, and tie up in hanks. I sell jute generally at home; the *furakas* come to buy it up. But if I want money for the market, I take a small quantity there and sell it to the *beparis*, who have houses in the place. The jute I grow is inferior to Shumboogunge; the length of the fibre being 3 to 7 cubits. I have already sown jute seeds on one-half *poorah* of land. In consequence of the drought I have not been able to break up virgin soil. I have, however, well manured the land. One *poorah* requires about six seers of seeds. The weight by which jute is sold is of a seer of 84 tolas 10 annas sicca weight. Rain and heat are necessary for the growth of jute. Too much rain stunts the growth of jute plants, and too much drought kills them. When rains are badly wanted, the caterpillars called *beekas* eat up the leaves and young shoots and damage the plants. Too much steeping weakens the fibre; under-steeping makes the fibre coarse and full of bark. A portion of jute land belonging to me is flooded during the monsoon, another portion is high land; the latter grows better fibre. Accumulation of water at the root makes the fibre full of root. One *poorah* of *kheel* or virgin land produces 16 maunds of jute. As a

rule, I work myself in the land, and there is Hamoor or Jogul in our part of the country (Ganta). I cannot tell the cost of cultivating a *poorah* of land, but the following details will give some idea of it. Ploughs are never hired in our place, each man has his own plough:—

Rs. A. P.

Eight to ten ploughings, one weeding, thrice harrowing and pulling up weak plants, —40 men	10	0	0
Cutting and removing, —40 men	10	0	0
Separating fibre, —40 men	10	0	0
Drying and tying up, —8 men	2	0	0
Rent	2	8	0
Total	34	8	0

I scarcely incur these expenses. I and other members of my family do all the work ourselves. I suffered a loss last season when I grew more jute than at any other time; I did not reduce the rice cultivation. I borrow money from the *mahajans* and pay in jute at market prices. I pay interest at Rs. 2-4 per 100 per *mensam*.

No. 61.—MAHOMED NUD HUSSEIN (of Jamalpore),
—Mymensing, 16th May 1873.

I own a large tract of land, of which I cultivated 10 beegahs with jute. I got 40 to 45 maunds of fibre; I have sold all at Rs. 2 per maund, except what I kept for home consumption. Next season I shall cultivate 7 or 8 beegahs. I do not take advances; expenses of cultivation are as follows:—

Rs. A. P.

Fifteen ploughings, including harrowing	3	12	0
Seed one seer	0	1	3
Weeding	1	8	0
Cutting and steeping	1	8	0
Total	6	13	3

I cut jute when in flower; if cut when in seed, the fibre is bulky, heavy, and coarse. There are three kinds of jute—*madhāi*, *pallai*, and *desi*; also *mexla*. The best kind is *desi*. The difference in the three kinds is, *desi* gives white long fibre, seeds brownish red, the stalks green, seed-pod round; *madhāi* fibre is of an earthy color, and shorter than *desi*, seeds same; *pallai* fibre reddish, seeds same.

I grow jute on both high and low-land; low-land gives the best quality of fibre. The former land I sow in Fālguna, the latter in March. If land is manured, I sow it year after year with jute, if not, I leave it fallow. The jute cultivated on low land is called "*āswina*" and on the high-land "*bhādooria*." In gathering of seed, I take it from no particular plants. Heavy rains, when the plants are very small, cause jungle to spring up, which proves detrimental to the plants. There is still jute in the hands of the cultivators and *mahajans*. After cutting the plants, I tie them in bundles and steep in water immediately. I steep in water without current; this water is dirty. Sometimes I steep in a creek of the river; this last water gives the best jute. The plants cut in Āshādhā (June, July) need steeping 6 or 7 days, those cut later (July, August) need 15 days.

The Ashādha jute is cut first. The fibre is stripped off from the bottom. This past season a quantity of jute was abandoned. There is a kind of hairy caterpillar called "*chinga*," which destroys jute by eating the leaves and bark; and when the bark is bitten, a black speck appears on the jute. We sell the jute we grow at times to the country traders, who go about the villages, and sometimes the ryots take it to the *hāt*; sometimes I send my jute to Serajgunge direct in charge of boatmen. I ship to the *dallāls* (brokers). I pay no commission. The buyers pay it. The boatmen bring my money either in cash or in articles of trade. I do not think I get the fair market price. I send down at a time 50 or 60 maunds in a boat at a cost of Rs. 5 or Rs. 6. I have never suffered loss by the dishonesty of boatmen, but I have known my neighbours so to suffer. The weight used is 84 tolahs 10 annas to the seer, and 40 seers to the maund. This is the same weight as is used in Serajgunge.

No. 62.—RAM SOONDAK SIKKAR (of Soobunkolli),—*Mymensing*, 18th May 1873.

I cultivated three *pakis* of low land, which, at the height of the floods, is four feet under water. The yield was 29½ maunds. The storm had levelled the plants, and besides, each laborer went home to look after his own affairs. One-fourth of the jute land was cultivated in partnership; the remaining three-fourths I cultivated myself. Three-fourths *paki* yielded 7½ maunds, the price whereof was Rs. 16 at Rs. 2-2 per maund. I cannot give the exact cost of jute cultivation alone, as I cultivated jute, *teel*, and paddy at the same time and with the same men, but from inquiries, backed up by my own calculation, I state as follows:—

First measurement of land—

18 Inches	=	1 Hat.
14 Hats	=	1 Nal.
6 + 5 Nuls	=	1 Paki.

One *paki* of land must be ploughed 12 times.

	Rs.	A.	P.
Expense of ploughing	...	3	0 0
Weeding twice, 15 to 7 men	...	3	0 0
Clearing away stunted trees, and a last weeding	...	1	8 0
Cutting and steeping	...	2	8 0
Washing and drying	...	3	0 0
Seed	...	0	4 0
Rent	...	1	0 0
Total		14	4 0

The average yield is eight to nine maunds per *paki*. I consider that the growers will, as a rule, understate their yield per beegah. A tolerably well-off ryot has from two to four yokes of oxen and one or two ploughmen. The above calculation includes cost of hired labor, which any class of people are obliged to employ. Those who cultivate themselves of course save more. I made Rs. 19-12 by the two and a half *paki* which I cultivated on the partnership principle, and by the three-fourths remaining I cannot say what I made. The most profitable is jute; the cost of paddy cultivation per *paki* is Rs. 7 to Rs. 3, and that of *teel* Rs. 7 to Rs. 8. The outturn I cannot say.

I cut the plant before it flowers. The flower jute is best. The fibre of the plant, cut before it is in flower, is thin and weak. The fibre of the seeding plants is stronger, and there is more woody substance at the butt. The very best time to cut is just as the seed-pods are growing after the flowers drop off. I calculate jute cut when in seed will weigh one-fourth more and fetch one-sixth less than jute cut when in flower. Jute which has not been standing in water is cut and steeped at once. Jute which has been standing in water is stacked in bundles and kept to dry for two days. It rots sooner. It takes from a week to a month to steep jute according to circumstances, *i.e.*, development of the tree, and the nature of the water. Stagnant water takes less time, and, if clean, makes the finest jute. Stagnant dirty water gives dirty color to the fibre.

No. 63.—JEBUN DASS AGOURWALLA (of Gouripore),—*Gaolpara*, 2nd June 1873.

I am the agent of the *mahajuni* firm of Jyth Mull Dhanraj, *Oswals* at Gouripore, and have been so for the last 12 years. The firm deals in jute, piece-goods, brass, and bell-metal-ware, as well as buys and sells some 4 to 6,000 maunds of jute annually, half of which is purchased direct from the growers at the Gouripore *hāt*, where they bring the jute for sale and half from *shaokars* (shopkeepers). As a rule, we do not buy from the *paikars*, and never through brokers. Our transactions are conducted in ready money. No advances are made to the growers, but some money is paid to the *shaokars* a month or fifteen days before the day of purchase. The shopkeepers of Gouripore and of Protabgunge, which is about eight miles to the north-west of that place, sell jute to us, and our men go and bring it thence. During the last season we paid Rs. 2-8 to Rs. 3-1 per maund of 84 tolahs and 10 annas to the seer, which is the standard weight in the district; the weight in Calcutta being 80 tolahs to the seer. The price during the present season ranges from Rs. 2-4 to Rs. 2-6 per maund.

About one-eighth of last season's produce still remains unsold with the *mahajuns* and *paikars*, but none of it is in the hands of the actual growers. The white jute is largely brought in, and commands a better price in the market than the red-tinged fibre. Our jute is largely exported in hanks of 2½ seers each to the mart at Serajgunge, where it goes by the name of the *Gouripore pāl*. The jute, of which we occasionally forward small quantities to Calcutta, is made up into drums of about one maund each, which costs us from Rs. 4-8 to Rs. 5 per 100 drums. The jute brought for sale by the growers is in hanks. In the month of Kartika and in the middle of Aughran it is brought by them in a wet state, which tends to discolor the fibre.

Steamers take jute from this place to Calcutta at a charge of 9 annas to 12 annas a maund, according to the season; but I understand that the rates have now been reduced to 8 annas per maund. It costs us, besides, an anna the maund

for *dingy* hire to convey the jute to the steamer, the distance of our place of business from the *ghat* being about three miles during the rains, and about eight miles during other months. In Calcutta we pay an anna to five pice for carrying the jute to the godowns, and the *araddar* charges a rupee upon every 100 rupees' worth of jute sold by way of commission, besides godown hire, for which there is no fixed rate. The trade in jute has been on the increase for the last seven years or so. The Gouripore jute is good, but that of Kankripara is better. A large portion of the former is free from wood and bark, of a good color, and is of a length of from four to six cubits. At Serajgunge also we pay a rupee for every 100 rupees' worth of jute sold. The sales are effected through our own countrymen and never through the *Bengalis*. The price is paid to us in Serajgunge twenty days after the jute is weighed, but in about ten days at Calcutta, where, however there is no fixed time for payment as at Serajgunge. Jute is brought in larger quantities now than in former years, but the quality of the fibre is deteriorating in many places. The growers, who are aware of this deterioration, attribute it to scanty rainfall, and consequently, to insufficiency of water in which to steep and wash the jute.

Itinerant traders, locally called *bhasani beparis*, come here from Serajgunge annually in the months of Aughran, Pous, and Māgha, and buy jute from the *mahajans* and *paikors*. Their purchases are made for ready-money. No European firm makes purchases here. There are three *usual* firms here dealing in jute. Germanari, Protahgunge, Shelye Kuteherry, Hasdewa and Dhoobree send jute to this mart. Last season the Gouripore traders bought some 40,000 maunds of jute, but in the previous season the quantity was 7,000 or 8,000 maunds less.

No boats are obtainable here. Jute is sent down to Serajgunge in Bengali boats which come up thence. It costs us from Rs. 25 to Rs. 30 for 100 maunds of jute sent down to Serajgunge. As a rule, 100 maunds of jute weighed and shipped to Serajgunge is generally reported to be found three or four maunds short there. No such deficiencies in the shipments are, however, heard of from Calcutta. Jute boats are not insured.

New jute comes into market in Kartika, and the trade, which is brisk in Aughran and Pous, begins to decline in Māgha.

Up to Bilashipara in Gōalpara, which is about two miles to the east of this place, jute is, to my certain knowledge, grown. I have no knowledge of the north side; but I hear that the cultivation of the plant is carried on as far as Backsherhat.

No. 64.—BĀBOO PRATAP CHUNDER BURDUA, ROY BAHADOOR, ZEMINDAR (of Gouripore),—Goalpara, 2nd June 1873.

In this part of the country jute turns out of a bad quality, if the processes (1) of sowing, (2) cutting, (3) separating, and otherwise preparing the fibre, are not carried out in proper time.

Continued rain and continued drought are equally unfavorable to sowing. If sown in disregard of the weather, the seeds are sure either to rot or to be burnt up. In the early part of the month of Vaisākha, during the present season, there was continuous rain for days; and the ground, which had been previously ploughed up and otherwise prepared for cultivation, got caked and had to be re-ploughed before the seed could be sown. The drought then followed; and the young plants began to look unhealthy and gradually drooped. The Vaisākha sowings in this part of the country have been nearly destroyed; and hail, and drought intensified the damage caused by the previous excessive rainfall.

A sunny day after a copious shower of rain is the best time for sowing the jute seed.

Under favorable circumstances, the plants should be cut just when the pods are running to seed. Haste and tardiness in cutting alike injuriously affect the quality and value of the fibre. If the plants are cut too early, that is, before the seed-pods begin to appear, either on account of the eagerness of the grower to be first in the market or the occurrence of floods, the fibre may be good to look at, but it is weak and weighs light. When the cutting is delayed, the fibre is coarse.

To obtain good fibre, the plants should not only be cut in time, but the stalks should be steeped in good water, where they should be kept neither for too short a time nor too long. Where good water is not available, and dirty water is used for steeping in, the jute produced is muddy-colored. Such parts of the stalks as float above the surface of the water do not rot well; and the result of this partial steeping is that the fibre is overspread with runners. When, from some cause or other, and sometimes perhaps in expectation of a sunny day, the grower does not prepare the fibre in time, the stalks are necessarily over-steeped. If, besides, the fibre is dressed on a wet day and exposed for drying in a place not protected from the rains, the jute turns out of a reddish color. The hailstorm, as has been the case this year, causes considerable damage by altogether breaking the plants. Weeding is an important process in the cultivation of jute. Grass must be well weeded out or the plants will not thrive. Jute cultivation and trade have been on the increase for some years past; but owing to the low prices of the last season, the area of cultivation has been narrowed during this year.

No. 65.—SHOAR NYSRO (of Teamari),—Goalpara, 3rd June 1873.

I hold a tenure of two and a half beegahs of land.

Within the last seven or eight years the people in our part of the district have taken to the cultivation of jute on a large scale. For the last seven years I have been growing it for sale. Before that time small quantities of it were raised by us for local consumption.

Last year I cultivated two *domes* of land with jute, and I obtained five and a half maunds of fibre. Had I not fallen ill at the time when the

field needed weeding, and had this very necessary process not been neglected, the yield of the fibre would have been about seven maunds. The jute I prepared had runners and was of a bad color; and I had to sell it for Rs. 1-4 per maund to an itinerant trader, who came up from Serajunga. There is no good water available near my house, and I could not make use of the Godadhar river, as stream water is known not to rot the plants quickly enough. I had therefore to steep them in a shallow pond. Hence the muddy color of the fibre and the runners on it. The good quality of fibre prepared in our village was sold at Rs. 2-12 to 3, and the medium quality at Rs. 2 per maund. No brokers are employed in our transactions. As a rule we sell jute, not to the *paikars*, who weigh it unfairly, but to itinerant traders and *mahajans*.

During the present season I have raised jute on two and a half *dones* of land, which I sowed in Vaisákha. The plants are now a foot and a half high; but the hail-storm of about fifteen days ago has broken the tops of the plants, which I fear will not thrive. I sow jute on high *doads* land near my homestead. It grows better on *doads* land than on *matial* soil. I manure the land with cowdung in Kartika, Aughran, and Pous, and begin ploughing it in Magha. This land has to be ploughed and to be passed under the ladder ten or twelve times between Magha and Vaisákha, in which last month, after a shower of rain, the seeds are sown broadcast. On the day of sowing the ladder is again drawn over the land, in order that the seeds may be covered over with earth. If rain falls soon after, the seeds do not germinate, and we have again to break up the ground, which gets caked, and to resow. But, if sunshine follows the sowing, the seeds germinate in three days, and the field has to be weeded in from fifteen to twenty-five days thereafter. When the plants are a foot and a half high, the ill-grown plants are plucked out and thrown away, in order that the field may be thinned and the promising plants allowed sufficient space to grow well. A space of from five to six inches is necessary for each plant. I weed once; but two weedings are better. I cut the plants in Bhadra and Aswina, when the pods are running to seed. The stalks, which are made up into bundles (each for one man to carry), are then thrown into water, into which they are sunk by the weight of the tops of the jute plants, cut off from the stalks and of other jungly plants, which are placed on the bundles. In from fifteen to twenty-five days the stalks begin to rot. The color of the jute depends entirely upon the water in which it is steeped. In a large sheet of water, such as a branch of a river without a stream, the jute acquires a fine color. If unavoidable, the stalks, after the water has been squeezed out of them, are converted into fibre even on a rainy day. But the jute is then made up into hanks and kept back till a dry day, when it is exposed to the action of the sun. The fibre is separated from the thick end of the stalks by repeated jerks in water. It is then washed in the same water, in which it has been steeped and afterwards dried for three days. Oversteeping spoils the fibre, destroying both its color and strength. Under-

steeping makes the fibre woody. I grow bitter *pat*, which produces the white jute. We do not grow the red jute. There is another kind of jute, called *hemunto*. The bitter *pat* yields a shorter fibre than the *hemunto pat*. I set apart a corner of the field for seed. I cut the plants preserved for seed in Aughran. The seeds are sufficiently dried in from five to ten days; the stalks are used for fuel. Jute will not grow on the same land for two years consecutively. Both *dham* is rotated with jute. Sometimes *suras* (mustard-seed) is grown in jute lands in the cold weather, and cut in Magha and Falguna. I have my own ploughs, and I myself work on the jute fields. I also employ a servant to assist me. I cannot give the cost of growing jute on a *doad* of land. Alternate rain and sunshine favor the growth of the plants, which are, however, stunted by drought. Rainy weather without sunshine gives a reddish color to the stalks. The *Aicha* or *Shoapocha* (hair-caterpillar), when it attacks the plants, eats up their tops and leaves. There is no particular season for its appearance. I have seen it on the plants both in the rains and in dry weather. Some years I have kept 35 seers, and some years one maund of fibre for home use. Gunny-bags are not made here. I do not grow jute under advances. People sometimes carry jute to market, either on their shoulders or in *bangies*. This year jute will be cultivated to a less extent than in former years. I cannot say how much less. There is no special rate of rent for jute land.

No. 36.—RAM HURRY SIRCAR (of *Haldaha*),—
Goalpara, 3rd June 1878.

My holding consists of 2½ *bees*, equal to 50 beegahs. I cultivate 3 beegahs with jute; and the ryots, to whom I let my land, also carry on the same cultivation. I raised 5 maunds of jute last year, and sold it for Rs. 2 per maund; I have sown the same extent of land this season, which, from want of rain after Vaisákha, has, however, been unfavorable to the crop. During such droughts worms eat up the plants, the ground dries up, and such of the plants as are not destroyed, are stunted. As I cultivate the land myself, it costs me only for oil-cake, which I buy at 8 annas a maund from the oil-mills. Besides this oil-cake, of which I put about 3 maunds to a beegah, I also use cowdung as manure. I cultivate jute on high land. The highest land, where water does not lodge, is the best adapted for this cultivation. The maund, I calculate by, is of 87 tolahs to the seer. I know of two kinds of jute, the red *Hemunto* and the white *Betari*. The *Hemunto* is of better quality. Both kinds are sown at the same time; but the *Betari* first comes to maturity. We cut *Betari* in Bhadra and *Hemunto* in Aughran. The seeds of both are of the same color and shape, as also the seed-pods, which are globular. The flowers of both are yellowish. I cut the plant when in full flower. The plant, if cut late, does not rot properly and the fibre it yields is coarse; I select new land for the cultivation every year. If I fall back on the old land the second year, a double quantity of manure has

to be used. The year after raising jute, I grow early paddy; jute, not paddy, exhausts the soil and unfits it for the cultivation of jute, but not for other crops. Jute is not grown with hired labor. A man owning more land than he can cultivate, lets out the surplus on the condition of an equal share in the profits—"Adiaree."

After cutting I steep jute in water at once, and leave it there for about eight days. When sufficiently steeped, I break the plant at about a foot from the root end. I then dash the stalk in the water to rid it of the wood, wash it in the same water and dry the fibre in the sun for two days. Over-steeping weakens the fibre and injures its color. If it is raining, when the plant is ready for dressing, I have to dry the fibre under cover. The jute thus produced is not of a good color. I lop off the tops of the plants after reaping and these tops are placed on the bundles of stalks to sink them into the water. After three or four days clods of earth are heaped upon these bundles to sink them still further. The speck on jute is caused by under-steeping. Fibre dried under cover turns out to be of a red color. Grey color is produced by muddy water and by the contact of the fibre with mud. Runners are the result of under-steeping. No jute was abandoned last year; a small quantity of that year's fibre has been left. Hailstones have destroyed some of the plants. Hailstorms generally come on annually in Vaisákha and Jyaishtha.

The *Woochinga* (cricket) by burro wing and the *chosa pocka* by eating the leaves, destroy jute.

No. 67.—PEER MAHOMED MANDAL (of Damoo-mara),—Goalpara, 3rd June 1873.

I hold a tenure of 20 bées of land at an annual rental of Rs. 60. I grew jute on only 3 *dones* last season and got 8 maunds of fibre which I sold to traders from Serajunge in the month of Magha for Rs. 2-8 per maund all round. In the beginning of the season I got an offer of Rs. 3 per maund, but I did not then sell in expectation of a better price, but I was disappointed. Besides the yield of my own crop, I had purchased 24 maunds of fibre at Rs. 2-8 a maund from the growers to whom I had made advances in the month of Jvaishtha and Ashádha. I grew and bought *desi dhola pát*. The tillage of land for the cultivation of this jute commences in Aughran, and the seeds are sown in Chaitra or Vaisákha after a shower of rain. Unless the ground is moistened by rain the seeds cannot be sown, and if sown, do not germinate freely, the seeds being eaten by *woochinga pocka*. The land sown with jute is once or twice weeded, and the plants are thinned and cut in Aswina and Kartika, when the seed-pods have appeared but not ripened. It is bad to cut the plant when in flower, as the fibre becomes weak. If cut when the seeds are ripe the fibre gets coarse. After cutting the stalks are made up into bundles and at once steeped in water for 12 to 14 days. The tops cut off from the plants as well as jungly plants and clods of earth are placed on the bundles to make them sink well in the water. The fibre is separated by breaking

the plant a cubit above the root end and ridding it of wood and bark by shakes and jerks on the water. This year too I have sown on 3 *dones*; but the drought has already done mischief to the young plants, which have been dried up a good deal. I grow jute on *kanda* and *chur* lands. These *churs* have been formed some 60 years.

It is now a mixture of sand and clay; I manure the land with cow-dung. People here do not use oil-cake. The *Pát* which we grow is called in commerce *Singmari Pát*. The jute grown by me and by others in my village is taken by the traders to Serajunge. I sell by the seer of 84 tolaas and 10 annas. I steep jute in one of the creeks of the Bramhapootra. In our part of the district all men steep in still river water, hence the good color of our jute. In my land, which is *chur* land, paddy does not grow well. The rent per *dona* or *bées* is Rs. 2 and Rs. 3 annually. I work with hired labor; but I cannot tell the cost of cultivating a *dona* of land with jute. It may be Rs. 10 or 15. We do not grow jute under advances, I keep 2 or 3 maunds of jute for home consumption, I have cattle and buffaloes. The seed-pods of the kind of jute we grow are roundish, I have not seen red jute plants. I grow *Betari* jute. The jute land cultivated by me is not flooded yearly. We sow jute on the same land for two years running, but not more. *Aus* paddy grows on jute land in the year in which jute is not sown; jute does not exhaust the soil as regards the paddy crops. It weakens the soil as far as its own growth is concerned; "aicha" some years eats up the leaves of the jute plants. *Woochinga* cuts the root and a kind of black insect cuts the top of young plants. Drought brings on all these insects. We do not, as a rule, keep the best plants for seeds. Half a seer of seeds is enough for a *dona* of land. When seeds are purchased we put a small quantity on moist ground to see if they germinate or not before sowing the whole. *Churs* formed 10 or 15 years may grow a jute crop. The cultivation of jute this year will be about 4 annas less. Jute cultivation has been carried on in our part of the pergunnah for the last 5 or 6 years. In the season before last I sold jute at Rs. 3, 4, and Rs. 4-12 per maund. Last year jute growers suffered loss.

No. 68.—MADAROO SHEIK (of Kushbey Jameera),—Goalpara, 4th June 1873.

I am a cultivator and grow jute; last year I raised about 15 maunds of jute on 5 *dones* of land. In consequence of low prices, I have not yet sold the last season's jute. I was offered Rs. 2-6 a maund, but I would not sell it at that price in expectation of higher figures. In the season before last I sold my jute at Rs. 4 a maund. Jute is called *patta* and all the people here grow it. It is white jute, the stalks and leaves of which are light green and the seed-pods globular. I have not seen any red stalked jute plant with elongated seed-pods. I have sown jute-seeds on 24 *dones* this year. The cultivation this year will be from 8 to 10 annas less than last year's in our part of the sub-division. The land on which I grew jute is

neither too high nor too low, but such as water cannot accumulate there. It is an admixture of clay and sand. I manure the land destined for jute with cow-dung obtained from my cow-house in the months of Chaitra and Vaisákha. The cow-dung of the year is stored up and used in the field in time. I cannot say how much manure is thrown or ought to be thrown. Manure is necessary for the growth of jute. Nobody buys manure here, but a few people who can afford it buy oil-cake and manure the jute land with it. Land, when manured with oil-cake does not need cow-dung. Cow-dung in my opinion is more efficacious as manure than oil-cake. Those who cannot get cow-dung buy oil-cake. I commence ploughing the jute land from the months of Aughran and Pous. The land is also passed under the plough and ladder twice every month till Chaitra or Vaisákha, when after a good shower of rain the seeds are sown. The sowing cannot be done if the ground be not previously moistened with rain. The seeds are sown on a sunny day and the ladder is again passed to cover them up with earth. They germinate in 3 or 4 days; and when the plants are of a height of about 6 inches, the grass is weeded out with an iron weeding hook. At the same time the ill-grown plants are pulled up and thrown away.

In the month of Bhadra and Aswina, when the seed-pods begin to appear, the plants are cut. If afterwards cut, the fibre turns out to be very harsh, but if before, the fibre weighs light and is weak. After cutting, the stalks are at once steeped in bundles upon which I place the tops of the plants previously cut off, and 4 days after I head clods of earth upon the bundles. The tops with leaves are first placed in order to allow the leaves to dry in the sun and to fall upon the stalks under steeping and to rot them soon. The clods are then placed to keep the bundles below the surface of the water; a sheet deep clear water is generally preferred. I steep jute in an arm of the river where there is no current. The steeping is finished in about 15 days if there is sunshine. In wet days it takes longer to rot. The fibre is separated from the end by jerks in the water. It is then washed in the same water, dried for two days and tied up in hanks.

If the fibre is separated on a rainy day and there is no sunshine to dry it, it gets reddish. The yield per *dona* is 3 to 5 maunds. Seeds, as a rule, are not bought and sold. A corner of the field is left uncut till Aughran for the seeds. It requires about a seer or a seer and a quarter of seeds for a *dona* of land. The seeds after separation from the pods are dried for 3 or 4 days and then stored up. Seeds are not steeped in water ere sowing. Jute exhausts the soil for a second crop. I raise jute on the same plot for two years running. On the third year I grow *aus* paddy; after 2 years I go back to the old field. I do not sow mustard, but some people do on land destined for jute in the same year. Oversteeping weakens the fibre, understeeping makes the fibre woody. Alternate rain and sunshine favor the growth of the jute plants. Rain alone makes the plant shoot out lateral branches. Excessive drought stunts its

growth. *Dicha* insect eats up the top and bark. Drought brings on the *woochinga* insects which cut up the young plants at the root. Hail-storm damages the plants a good deal by breaking the tops. The drought this year has damaged the early paddy plants much and the jute also, but not to the same extent. There has luckily been no hail-storm in our part of the sub-division. The weight by which jute is sold is 84 tolahs and 10 annas the seer; *meeta* and *tosha* are not grown in our quarter. We do not grow jute under advances. We sell jute to the *prikars* (petty dealers) and local *mahajuns*. Traders also come from Seraj-gunge to buy the fibre. Sometimes the buyers come to our houses and make their purchases. At other times we carry jute to their places of business. The *mahajuns* cart away the jute. This year I sowed jute early in Vaisákha after the rains and the plants are now about 3 feet high.

Last season the price was low and the ryots did not make any profit and in some cases suffered a loss. The jute we grow here goes by the name of *dhoolbree pdt.* We grow good jute, but not so good as what goes by the name of Kankripura jute. In our part of the sub-division the jute plants are looking healthy.

Cost per *dona* :—

				Rs.	As.	P.
10 Ploughings	...	...	...	5	0	0
Weeding, &c.	...	...	...	2	0	0
Cutting	...	...	...	1	0	0
Separating	...	...	...	1	8	0
Drying	...	...	...	0	8	0
Rent	...	...	...	0	3	0
Total	...	...	...	10	3	0

No. 69.—HURRONATH SIRCAR AND ANUNDO MOHUN CHUNDER, FURRAHS (of Gossaingunge),—Goalpara, 4th June 1873.

We deal in jute. Either we buy it for cash or make advances to the ryots to cultivate it for us. When making the advances, which we do about this time, we sometimes fix the price at which the jute is to be delivered. Otherwise we make the grower give us three to five seers in excess of the quantity sold for a rupee in the market. This year we are stipulating for a fixed price of Rs. 1-8 to 1-10 per maund. This system does not, as might be supposed, induce the ryot to grow inferior jute; for, as they deal with us from year to year, it would not be to their interest to break faith with us. The weight by which our transactions are regulated is a seer of 84 tolahs 10 annas; but to the east, about Majparah, the standard weight is 80 tolahs to the seer. The hill tribes towards Majparah being Hajongs, Rabhas, Cacharis and Metches, have taken to jute cultivation on a small scale since the last two or three years only. They grow really superfine jute, very clean, though not long, and bring small quantities of it on their backs for sale to the *hats* of Gossaingunge, Salmarra, Luckipore, Jhunnadar, &c. These men do

not cut the plant at the root, but near the centre, so that only the finest portion of the fibre is kept. We sell the jute here to itinerant traders and rarely send it to Serajgunge. The quantity of jute exported from Gossaingunge is 5,000 maunds of very fine quality, which we bring in on ponies, pack bullocks, or bangies, and occasionally on hackery from a radius of six miles. There are no pucca roads and only one *ddk* road. We sent our jute to Serajgunge for sale this year at a cost of Rs. 3-6 laid down there and sold it at Rs. 2-4 to 2-8. We prefer selling locally. Our transactions average about 200 and 400 maunds each. We would have traded more largely, had prices been better. We also trade in salt, piece goods, &c. The cultivation of this season will be from 4 to 6 annas less on both sides of the river. Some ryots on the east side of the river burnt their jute as fuel, being disgusted at the prices ruling. A beegah of fine land well cultivated should yield 5 to 7 maunds. (Anundo Mohun raises a small quantity of the fibre himself.)

No. 70.—NESH MAHOMED (of *Bondbôr*),—*Goulpara*,
7th June 1873.

I am an agricultural ryot and hold 10 beegahs of land at a yearly jumma of Rs. 13. Last year I grew jute on three beegahs of land. This year also I have cultivated three beegahs with the same plant. I got 16 maunds of fibre last season and sold it to the *mahajans* who had advanced me money, for Rs. 2-8 and 2-12 the maund. The price fixed at the time of taking the advance, namely Fâlguna or Chaitra, was Rs. 2-8 a maund. I got Rs. 2-12 from the itinerant traders who had come from Serajgunge. The jute sold for 2-8 and 2-12 respectively was of one and the same kind. I grow *amoni pôt*. Jute is called *koshta* in our part. Ours is white jute, the stalks and leaves of which are green, and the seed-pods globular. I know red jute, the seed-pods of which are elongated. The fibre is called *mesta* in our part. It is cultivated in small quantities; the fibre has a reddish color. I grow on old *chur* land, i. e., on soil composed of sand and clay. I have got only seven head of cattle, and consequently I do not get cow-dung sufficient to manure my lands. People manure their jute land in order to make them fertile. Jute weakens the soil as regards itself only. I therefore select a new plot on the second year—growing *aus dhan* on last year's jute land. Paddy grows as usual on jute land. Two or three years after, I fall back upon the old land, and grow jute thereon. The *chur* land upon which I grow jute has, I hear, been formed upwards of 70 years. In the season before last, I sold jute at Rs. 2 a maund to the *mahajans* who advanced money, and at Rs. 3 to other buyers. The poorer ryots grow jute under advances. If the price be fixed beforehand no interest is charged, but if the price be not fixed the ryot has to sell his jute to the advancing party at Rs. 2-8, when the market price is Rs. 3 a maund.

Interest at half an anna per mensem is charged on each rupee advanced. The land is manured in the months of Mâgha and Fâlguna. The tillage of jute lands begins in Kârtika. Occasionally mustard seed is grown on jute land, and it is after the removal of this crop that the cow-dung is put in and the land ploughed up. This land is ploughed five or seven times like paddy land, which is also weeded twice. The jute fibre I produced was five to six cubits long; the best is seven cubits. The jute we grow is called by the traders' people *sholemani pôt* and is of good quality. We sow jute seeds in the months of Chaitra and Vaisâkha. The seeds are sown broadcast on a sunny day after a rainfall; they germinate in three or four days; and after 20 or 25 or even 30 days, the grass is weeded out of the fields once and sometimes twice. If the plants are too close to each other, such as look ill-grown are pulled up and thrown away. The sowings of Chaitra are cut in Bhâdra, and those of Vaisâkha, later, i. e., at the end of Bhâdra or in Aswina. If the plant be cut in flowers the fibre turns out to be nice and glossy. For want of labor, I, however, cut it when it is running to seeds. Jute plants should be and are, as a rule, made up into bundles at once after cutting and steeped in *bheel* water. The tops of the plants, which are previously cut off, as well as jungly plants, are placed upon the bundles, in order to prevent the stalks, or at least part of them which is exposed to the sun, from getting dry. After three days or so, clods of earth are put on to make the bundles sink a little below the surface. We do not turn the bundles, while under steeping, nor do we steep them in water, which is less than waist deep. The better the water is, the finer the fibre. The steeping takes 17 or 18 days, when the stalks are well rotted, about a score of them are taken up, broke at about a cubit above the root end and the reed on the broken parts is then got rid of by jerks in the water. The remaining portion of the stalks is similarly treated. The fibre is then washed in the same sheet of water, and, after the moisture has been wrung out, is exposed to the sun on a bamboo scaffolding. It is dried for two days. If there is no sun, we try to dry it in the air; but as we have no room, the fibre rots and assumes a reddish color, which injuriously affects its selling value. This is the case with white jute. In the case of the red jute, the stalks are broken at the thin or top end, and the fibre separated from that end by jerks. It is said that the fibre is more easily separated from the top than from the root end. Oversteeping injures the strength and spoils the color of the fibre. Understeeping causes the bark to adhere to the fibre. Bad water produces bad color. If *aichapocka* attacks the jute plants, the parts attacked turn out to be specky. Drought has nearly destroyed the jute plants this year. Owing to the low prices of last season, the cultivation has been reduced by at least 4 annas and with the droughts the yield will be half of last year's crop. Last year the cultivation of jute was the largest heretofore known in the 20 years or more in which it has been carried on in this part of

the country. The cost of cultivating a beegah is as follows :—

	Rs.	A.	P.
Thirty ploughs, at 4 as. each	..	7	8 0
Weeding, &c., 10 men	..	1	14 0
Cutting	..	1	14 0
Separating, &c.,	..	1	14 0
Drying and tying up	..	0	15 0
Rent	..	0	12 0
Total	..	14	13 0

Cow-dung is not bought and sold. We do not use oil-cake. The plants which are reserved for seed are cut in Aswina and after 4 or 5 days' drying the seeds are stored up; being sold, at the ryot's choice at two to four pice the seer. Three seers of seed will suffice for a beegah. The weight by which jute is sold is a seer of 87 tolahs.

No. 71.—**SHAIK NOSHOO** (*of Rohumari*).—*Goalpara*, 11th June 1873.

I cultivate 5 beegahs with jute. Last year when I cultivated the same extent of land, I sold my jute at Rs. 4-2 to 4-4 to itinerant traders and *mahajans* in the months of September and November. My fibre was very good. I have 20 cows, and I manure a beegah of land near my house by pasturing them there. I remove my cow-house every year close to the patch of land intended for jute cultivation. I do not manure paddy land nor land for other crops. From manured land I get a finer yield, that is, about 7 maunds per beegah. Plants 8 hands high will give this yield. I commence sowing in Chaitra and finish in Vaisákha. The plants of Chaitra sowing are now waist-high, although stunted by the drought. In ordinary years they would have been as high as my head (say 5½ to 6 feet). The Chaitra sowings are made on low lying land, *i.e.*, the slopes of *bheel*, because I need cut this jute before the lands are inundated. Moreover, the low lands are moist, and I can plough and sow them independently of rain. The higher lands being parched and dry, I have to wait for rain before I can sow. The Vaisákha sowing was not delayed by rain, but there was afterwards a drought which lasted nearly a month, and has destroyed much of my crop, and nearly all of it in parts. Where the land was unduly sandy, the plants are entirely withered, but they have stood the weather tolerably well where the soil had a good proportion of clay. Hail-storm did some harm to the early sowings. One way or another half of my jute has been destroyed this season. I keep one servant whom I give Rs. 22 annually with board. In the gold weather, I raise no crops on the lands where I have grown jute. Jute exhausts the soil. It would not grow well at all

on the same land two years running. After one crop, land should not be cultivated with jute for two or three years. I sow paddy the year after jute. The following year I put rapeseed; sometimes I raise a crop of tobacco. I then let the land lie fallow for two years; although some do for one year only. After this I sow a crop of paddy and the next year jute. This is the system usually adopted in this part of the country. I reap my jute as the young seed-pods begin to appear, which is the best time. Cutting earlier gives a smaller yield, although the jute looks nice. Cutting late causes the fibre to retain much of the bark. The black speck on jute I have seen since my childhood; but I have never been able to trace the cause of it. After cutting I make up the stalks into bundles and steep them in *bheels*, and in the still parts of a *khal* connected with the river. The latter gives the best jute, if there is no silt in the water. If there is silt, and it gets to the fibre, the jute becomes blackish or grey. After placing the stalks in the water, I cover them with the tops of the jute plants and with jungly plants to prevent such parts of the stalks, as may be above the surface, from drying up. Two or three days later I keep on the bundles clods of earth to sink them still lower. If I placed the clods at the outset, the bundles would sink at once, which would not answer. I can give no reasons for this part of the process of steeping. I make up the bundles by placing the root or thick end of one stalk with the top or thin end of the other, and by fastening them to a bamboo, the bundles forming a sort of raft. The best depth of water to steep jute in is up to a man's waist. In shallow water the process of rotting cannot be complete; and the out-turn of the jute is in every way unsatisfactory. After sufficient steeping, the fibre is prepared in the usual way. Should rain be falling, and there be no sunshine at the time for preparation I place the bundles of fibre on mats on the floor of my house to be dried there. If the sun appears in about two days or so, no harm will have accrued; but if dull weather continues the jute will begin to rot and turn of a reddish color. I choose my seeds from the ill-grown plants. I know of *dhola pat* (white jute). I also know of *lat pat* (red jute) which is grown in very small quantities. The former has a round seed-pod, and its seeds are of a reddish color. The latter is long-podded, and its seeds are blackish. The plants of both varieties grow to the same height; but never having cultivated the red jute I can say nothing about the fibre. Sometimes I take advances from the *mahajans* on interest at one to one and a half anna per rupee per month; my produce to be delivered to them at the market rate of the day. I sell by the maund of 84 tolahs 10 annas to the seer, and buy here at 87 tolahs to the seer.

APPENDIX C.

Statement showing the localities in some districts in Bengal, where Jute is grown, with the botanica names assigned to each description by the Superintendent, Botanic Gardens, after an experimental cultivation of the plant.

Division.	District.	Place whence received.	Number in the Jute Commissioner's register.	Names of Pat.	Botanical result.	REMARKS.
Burdwan.	Burdwan ...	Culna ...	58	Nalita pat ...	Corchorus capsularis.	
		Ditto ...	59	Lal homi pat ...	" olitorius.	
		Ditto ...	60	Sada domi pat ...	" "	
		Ditto ...	61	Mesta pat ...	Hibiscus cannabin.	
	Midnapore ...	.....	52	Bite pat ...	Corchorus olitorius.	
			53	Toota pat ...	" capsularis.	
			54	Kangra pat ...	Hibiscus cannabin.	
	Hooghly ...	.....	13	Desoo pat ...	Corchorus olitorius.	
	24-Pergunnahs	.....	10	Dhunchia ...	Aschynemone cannabin.	
		Suburbs ...	14	Kaloo kustooro ...	Hibiscus abelmoschus.	
		Salkheera ...	15	Dhunchia ...	Aschynemone cannabin.	
		Ditto ...	16	Ghrito Kanchan ...	Corchorus olitorius (rod).	
		Ditto ...	18	Sanchi ranga ...	Corchorus capsularis.	
		Ditto ...	19	Sada dhakai ...	" olitorius.	
		Barnaset ...	20	Luckipore or dholi ...	" "	
		Ditto ...	27	Bangee pat ...	" "	
		Ditto ...	28	Lucki foal boyi pat ...	" "	
		Ditto ...	29	Mesta ...	" capsularis.	
		Ditto ...	30	Bogi pat ...	" olitorius.	
		Ditto ...	31	Amun dholi pat ...	" "	
		Barriporo ...	32	Jesoo pat ...	" capsularis.	
		Ditto ...	33	Rug nai pat ...	" "	
		Ditto ...	34	Mesta ...	Hibiscus cannabin.	
		Diamond Harbour ...	35	Dhunchey ...	Aschynemone cannabin.	
Jessore.	Jessore ...	.....	11	Mesta ...	Corchorus olitorius.	
			12	Mitha pat ...	" "	
			21	Jesoo pat ...	" capsularis.	
			22	Sada pat ...	" "	
			23	Bogi pat ...	" "	
			24	Mogral pat ...	" olitorius.	
			25	Baca sunn ...	Crotalaria juncea.	
			31	Toota pat ...	Corchorus olitorius.	
			47	Sanchi pat ...	" "	
			48	Mechhal pat ...	" "	
Moorshedabad.	Moorshedabad ...	Jungipoor ...	48	Mechhal pat ...	" "	
			49	Hontara pat ...	" capsularis.	
			50	Amala pat ...	Hibiscus cannabin.	
			51	Sunn ...	Crotalaria juncea.	
			98	Amama pat ...	" "	
	Dinagopore ...	.....	99	Hemntia pat ...	Corchorus capsularis.	
			100	Bladai pat ...	" "	
			101	Kosta ...	Hibiscus cannabin.	
			102	Gopal chog ...	Corchorus capsularis.	
			103	Kala naricha ...	" "	
Rajshahye.	Sontaporo ...	.....	104	Hemntia pat ...	" olitorius.	
			105	Dhala pat madhai ...	" "	
			106	Mesta ...	Hibiscus cannabin.	
			107	Choral naricha ...	Corchorus capsularis.	
			108	Jati bladoga ...	" "	
	Gungaramporo ...	.....	109	Lal pat, madhai, also called bunmuckhi.	" olitorius.	
			110	Jati hemantia ...	" capsularis.	
			111	bladoga ...	" "	
			112	Amuna ...	" olitorius.	
			113	Loba or pati ...	" capsularis.	
Rajshahye.	Ransankal ...	Ditto ...	114	Marna ...	" olitorius.	
			115	Mesta ...	Hibiscus cannabin.	
	Thakurgaon ...	.....	116	Tala ...	Corchorus capsularis.	
			117	Marna, bunmuckhi or ramna.	" olitorius.	
	Maldah ...	.....	118	Mesta ...	Hibiscus cannabin.	
			83	Dhumai, nala pat ...	Corchorus capsularis.	
	Rajshahye ...	.....	39	Sunn ...	Crotalaria juncea.	
			40	Mesta ...	Corchorus olitorius.	
			41	Koshta ...	" capsularis.	
Pubna.	Pubna ...	.....	71	Satnala koshta ...	" olitorius.	
			72	Bura koshta ...	" "	
			73	Chota koshta ...	" capsularis.	
			86	Bura pata ...	" "	
			87	Deswal ...	" "	
			88	Choro pat ...	" "	
			89	Sunn ...	Crotalaria juncea.	

Division	District.	Place whence received.	Number in the Anti Com missioner's register.	Names of Pat.	Botanical result.	REMARKS.
Dacca.	Dacca		63	Sunn ...	<i>Crotalaria juncea</i>	Dacca.
			64	Mesta ...	<i>Hibiscus cannabina</i>	
			65	Mesta ...	" "	
		Moonshegunge	75	Koshla ...	<i>Corehorus capsularis</i>	
		Ditto	77	Mesta ...	<i>Hibiscus cannabina</i>	
			119	Bhowal seed, No. 1	<i>Corehorus capsularis</i>	
			120	Ditto, No. 2 ...	" "	
		Moonshegunge	121	Kaligunge, No. 1 ...	<i>Corehorus capsularis</i>	
			122	Ditto, No. 2 ...	" "	
			123	White koshla ...	" "	
			124	Red koshla ...	" "	
			125	Backrubul ...	" "	
			127	Mondria bhowal ...	" "	
			128	Kalindoe pat ...	" "	
			129	Nyel chur pat ...	" "	
			130	Baboo chur ...	" "	
			131	Cow ching ...	" "	
			132	Mirzapore pat ...	" "	
			133	Arnia pat ...	" "	
			134	Koshta (amun) ...	" "	
			135	Ditto (aug) ...	" <i>olitorius</i>	
			136	Mesta ...	<i>Hibiscus cannabina</i>	
	Furzedpore		137	Bilan ...	<i>Corehorus capsularis</i>	
			138	Buci ...	" <i>olitorius</i>	
			139	Desce ...	" <i>capsularis</i>	
			140	Mesta ...	<i>Hibiscus cannabina</i>	
	Backergunge		93	Buci pat ...	<i>Corehorus olitorius</i>	
			94	Desce pat ...	" <i>capsularis</i>	
			95	Saha mesta ...	<i>Hibiscus cannabina</i>	
			96	Lali ...	" "	
			97	Sunn ...	<i>Crotalaria juncea</i>	
	Mymensing		66	Patha ...	<i>Corehorus olitorius</i>	
			67	Boni ...	" <i>capsularis</i>	
			68	Amos ...	" "	
			69	Mesta ...	<i>Hibiscus cannabina</i>	
			70	Koach mardan pat ...	<i>Corehorus capsularis</i>	
			142	Diobhar ...	" "	
			143	Metto ...	" <i>olitorius</i>	
			144	Shonboosunge ...	" "	
Dumkingpore.	Mouchyr		45	Sarya suson ...	<i>Crotalaria juncea</i>	
			46	Patma ...	<i>Hibiscus</i>	
Chandrapore	Purneah		78	Patma ...	<i>Corehorus capsularis</i>	
			80	Chandoma ...	<i>Hibiscus cannabina</i>	
Cooch Behar.	Hazareebaugh		55	White kodrum ...	" "	
			56	Red kodrum patwah ...	" <i>subarifica</i>	
			57	Sammel or sunn ...	<i>Crotalaria juncea</i>	
	Singhpooni		90	Mitha pat ...	<i>Corehorus olitorius</i>	
			91	Toota miragode ...	" <i>capsularis</i>	
Cooch Behar.			145	Teiga nara ...	<i>Hibiscus cannabina</i>	
			146	Tta nara ...	<i>Corehorus capsularis</i>	

APPENDIX D.

Form of a Contract entered into by a Jute-growing Ryot at the time of taking advances in the 24-Pergunnahs.

ক্রীতদাস ।

মহাশয় জুত

মহাশয় বরাবরেয় ।

লিখিতঃ জি

কসা পাটমোলা কজ্ঞ খত পত্র-

মিদঃ কাশাণ্ডাগে আমি মহাশয়ের নিকট কোং চলন শীত্কা ২৫ টাকা পাটমোলা অগ্রিম দানন লইলাম উক্ত টাকায় ফিঃ মণ ২১ দুই টাকার হিসাবে আগামী সন ১২৭৯ সালের মাক পোষ মাচায় ১০/ মণ পাট উত্তম শুকনা করিয়া নিজ ঘরতে মহাশয়ের বারুইপুরের বাড়িতে পৌঁছিয়া দিব। যদি নিয়মমত পাট আদায় না করি তবে উক্ত সময়ে বিক্রীত বাজার দরে উক্ত ১০/ মণ পাটের মূল্য ক্ষুদ্রসহ আদায় করিব। এই নিয়মে নগদ টাকা দস্তবদস্ত বুঝিয়া পাইয়া পাট মোলা খত লিখিয়া দিলাম। ইতি কার্তিক সন ১২৭৯।

SREE SREE ISSUR.

To the high in dignity

The full of grace.

WRITTEN by Sree

who

enters into an agreement for the sale of jute. I do hereby take an advance of Rs. 24, and agree to deliver at my own expense to your house at Barripore in the month of Pous next 1279 (B. S.) twelve maunds of well-dried jute at the rate of Rs. 2 per maund. If I fail to deliver the jute according to agreement, then I shall pay the value of the said twelve maunds of jute with interest at the market price of the aforesaid time. Under this condition I execute this bond after taking the money in cash, hand to hand.

Dated Kartika, 1279 B.S.

Copy of a Plaint filed in the Court of the Moonsiff of Jamalpore, in the Mymensing District, for breach of a contract for the delivery of Jute.

১০৪ নং ১৮৭৩ সন। সন ১৮৭৩।

ছোট আদালত।

চৌকী জামালপুরের মুন্সেফী আদালত।

ছোট আদালত শ্রেণীর মোকদ্দমা।

বাদী।

পচাখলিফা ওলদে মৃত ফকীর মামুদ খলিফা সাকিন টিকাজালী পং পাতিলাদহ এঃ মুন্সেফী জামালপুর।

বিবাদী।

ভিঁরি মামুদ সদ্দার সাকিন আমখাওয়া পং পাতিলাদহ এঃ মুন্সেফী জামালপুর।

মঃ ৩৭।১০ আনা দাবীর পরিমাণ।

প্রতিবাদী প্রতিটাকায় ১।৫ সের দরে ৯/৫ সের কোষ্ঠার মূল্য মং ১৫ টাকা ১০৭৭ সনের ১৬ ফালগুন এক খণ্ড গাট্টা দ্বারা অগ্রিম লইয়া ১০৭৮ সনের আশ্বিন মাসে কোষ্ঠা দেওয়ার অঙ্গীকার করিয়াছিল তাহা না দেওয়ায় প্রতিবাদীর দেওয়া গাট্টাপত্রের শর্তমতে উক্ত সনের আশ্বিন মাসের বাজার দর প্রতি মণ ৪২ টাকা দরে মং ৩৭।১০ আনা ও আদালত ব্যয় ক্ষুদ্রসহ পাইবার দাওয়া। ইতি সন ১০৮০ সন ত্রিবিধ ১০ টৈখাখ।

এই মালিশের করিরাণী আমি পচাখলিকা ঠিক জামাইডেহি বে এই আরজীতে বাহা লেখা আছে
তার আমার জাম ও বিশ্বাসমতে সভ্য। ইতি সন ১২৮০ সন তারিখ ১০ বৈশাখ, জামালপুর যোকারে
সভাতা নজুখৎ হইল ইতি।

নিম্ন।
পচাখলিকা।

Copy of a Contract entered into at Jamalpur, in the Mymensing District, for delivery of Jute.

মহামহিম ঐহুত পচাখলিকা।
বরাবরেয়।

ঐ
তিরিমাঝ সজ্জা
সাং জামালপুর

লিখিতঃ ঐতিহাসিক সনদার সাকিন আমখাওয়া কোষ্ঠি যার সাক্ষিপত্রমিদং সন ১২৭৭ সন
সালমো লিখনঃ কার্যক্রমে আমি আপনার লিকট মবলগে ১৫ টাকা কোষ্ঠার যার সাক্ষি লইলাম
কীঃ টাকাক্তে দর ১১৫ সের হিসাবে একুশে ৯৫ নয় মণ পনের সের সুক্লিমমতে কোষ্ঠি সমস্ত আমার
আশ্বিন মাসে একযোগে কোষ্ঠি দিয়া শোধ করিব। করার খেলাফ করি কোষ্ঠি বিক্রয় নিশা করিব।
এতদ্বারা সাক্ষিপত্র লিখিয়া দিলাম। ইতি সন সন ১২৮০ তারিখ ১৬ কালগুন।

ঐমেলাখলিকা।
সাকিন আমখাওয়া।

ইসাদী।
ঐআলেক মামুদ।
সাং আমপুর।
ঐআনন্দকুমার সুর।
সাং খলিলপুর।

Translation of the above documents.

SMALL CAUSE COURT CLASS CASE.—CASE No. 404 OF 1873.

In the Court of Moonsiff, Chowkee Jamalpure.

POCHA KHOLIPHA, son of FUKER MAHOMED KHOLIPHA, inhabitant
of Tickajali, pergunnah Patiladaha, Station Jamalpure Moonsiff. ... *Plaintiff,*

SHIRAZ MAHOMED SIEDAR, inhabitant of Amkhaoa, pergunnah Patiladaha,
Station Jamalpure Moonsiff. ... *Defendant.*

Suit laid at Rs. 37-8.

THE defendant executed a *sattapatra* (agreement) on the 16th Falgun 1277 B. S., binding himself to deliver 9 maunds 5 seers of jute in Aswina of 1278 B. S., in consideration of the advance of Rs. 15 taken by him as the amount of value for the same at the rate of twenty-five seers per rupee. The defendant having failed to deliver that jute, this claim has been brought, in accordance with the terms of his *sattapatra*, for recovery of the sum of Rs. 37-8, being the amount of value thereof due at the bazar rate of 25 seers per rupee prevailing in Aswina of the year 1278, together with costs and interest. Dated 10th Vaishakha 1280 B. S.

I, Pocha Kholipha, the plaintiff in this suit, do declare that what is stated in this plaint is true to the best of my knowledge and belief. This verification is signed at Jamalpore on the 10th Vaisakha 1280 B. S.

POCHA KHOLIPHA.

To
POCHA KHOLIPHA of high dignity.

SHREE MAHOMED
SIRDAR,
Inhabitant of Amkhaoa.

I, SHREE MAHOMED SIRDAR, inhabitant of Amkhaoa, do execute this *sattapatra* in 1277 B. S. I do hereby take from you the advance of Rs. 15 for supplying jute. I do agree and stipulate by this *sattapatra* to liquidate that amount by means of delivering at once 9 maunds and 15 seers of jute, at the rate of 25 seers per rupee, and in default I will be responsible. Dated 16th Falgoon 1277 B.S.

WITNESS,
SREE NEDHA KHOLIPHA,
Inhabitant of Amkhaoa.

SREE ALEK MAHOMED,
Inhabitant of Ampore.
SREE ANUNDO COOMAR BOSE,
Inhabitant of Khalipore.

• Copy of a plaint filed in the Court of the Moonsiff of Jamalpore, in the Mymensing District, for breach of a contract for the delivery of Jute.

চোট আদালত

৮১০ নং।—সন ১৮৭২

চৌকী জামালপুরের মুনসেফী আদালত।

বাদী।

পরবাসু সেখ ওলদে মৃত নেক সেখ সাকীন কাজলাপাড়া পং পাতিলাদহ এঃ মুনসেফী জামালপুর
বিবাদী

নামাজু সর্দার ওলদে মৃত মেন্দা সর্দার সাকীন কাজলাপাড়া পং পাতিলাদহ এঃ মুনসেফী
জামালপুর।

মঃ ৬০ টাকা আদালত ব্যয় সুদ সহ পাইবার দায়।

হেতু।

বিবাদী প্রতি টাকায় ৭০ সের কোঠা দর স্থিরতরঃ ১৫/মণ কোঠার মূল্য ২০ টাকা ১২৭৭ সনের
১২ টেড এক খণ্ড সাক্ষাৎ আমার নিকট হইতে অগ্রিম লইয়া ১২৭৮ সনের ৩০ ভাদ্র কোঠা দেওয়ার
অঙ্গীকার করিয়াছিল তাহা না দেওয়ায় তাহার দেওয়া সাক্ষাৎের শর্তানুযায়ী উক্ত সনের ভাদ্র
মাসের বাজার দর প্রতি মণ ৪ টাকা হারে ১৫ মণ কোঠার মূল্য মঃ ৬০ টাকা আদালত ব্যয় সুদ
সহ বিবাদী ক্রমে ন্যায্যরূপে পাইবার স্বত্বান বর্তী ইতি সন ১২৭৯ সন তারিখ ১৬ অগ্রহায়ণ।

আমি এই আদালত নিষিদ্ধ করিয়া দীর্ঘ আলাইতেছি যে এই আদালতে যাহা লিখা হইল
তাহা আমার জ্ঞান ও বিশ্বাসমতে সত্য সন ১২৭৯ সাল তারিখ ১৬ অগ্রহায়ণ জামালপুর বোকায়ে
চলুখত হইল।

নিঃ।

পরবাসু সেখ।

Copy of a Contract entered into at Jamalpore, in the Mymensing District; for delivery of Jute.

৮১০ নং।

১৮৭২ সন।

বরাবর জীবিত পরবাসু সেখ।

বরাবরেঃমু।

লিখিতঃ জী নামাজু সোনার ওলদে মেন্দা সেখ সাকীন কাজলাপাড়া পরগনে পাতিলাদহ ইফেসন
দেওয়ানগঞ্জ কোঠারপর সাক্ষাৎমিমঃ সন ১২৭৭ সালোঅ লিখনই কাখণ্ডায়ে আমি আপনার নিঃ-
তইতে কোঠারপর মবলগে ২০ কুড়ি টাকা কজ্জ লইলাম ইহার কোঠা প্রতি টাকায় ৭০ ত্রিশ শের
হিমারে মোঃ ১৫/ মণ কোঠা সন ১২৭৮ সনের ৩০ ভাদ্র তারিখে একযোগে একমাপে
কোঠা দিয়া মবলগ মজ্জুর আদারপূরক এই সাক্ষাৎ ওরাপেব লইব। একযোগে একমাপে কোঠা
না দিয়া ক্রমে আদার করি তবে বখন যে কোঠা আদার করিব-তৎকালীন এই সাক্ষাৎ পুতে ওয়াণীল

হাতসহ।
জী নামাজু সোনার।

লিখিয়া দিব যেভাবেক করার কোটা আদায় না করিলে এই সনের অন্যান্য মহাভনের বিক্রী হুরত আপনার কোটার বিক্রীর কতি সমেত আদায় করিব এই সাত্তার পুস্তের ওষাশীল ভিন্ন আলাহিদা রসীদ কিম্বা প্রমাণ পের করি তাহা অসিদ্ধ এতদ্বার্থে কোটারপর সাত্তার লিখিয়া দিলার ইতি সন সন্ন্য তারিখ ১২ চৈত্র ।

ইসাদী ।

নবিশীদা ।

শ্রী নজুমদ্দীন সর্দার ।

সাকিন দিকাজানী ।

শ্রী কানাই সেখ ।

সাকিন কাজলাপাড়া ।

শ্রীমনী প্রধান ।

সংগ্রহ ।

শ্রীমতা সেখ ।

সংগ্রহ দিকাজানী ।

Translation of the above documents.

SMALL CAUSE COURT CASE No. 810 OF 1872.

In the Court of the Moonsiff, Chowkeo Jamalpara.

PORBASSOO SHEIK, son of Nek Sheik, deceased, inhabitant of Kajlapara, pergunnah Patiladha, Station Jamalpara Moonsiff ... *Plaintiff,*

versus

NAMAJOO SIRDAR, son of MENDA SIRDAR, deceased, inhabitant of Kajlapara, pergunnah Patiladha, Station Jamalpara Moonsiff ... *Defendant.*

Claim for recovery of Rs. 60 with costs and interest.

IN consideration of the sum of Rs. 20 received by the defendant as an advance under a *sattapatra* on the 12th Chaitra 1277 B. S., for the amount of value for 15 maunds of jute, at the rate of 30 seers per rupee, he stipulated to deliver the same on the 30th Bhadra 1278 B. S. In consequence of his failure to deliver that jute, I am justly entitled to demand from the defendant, in pursuance of the terms of above *sattapatra* executed by him, the sum of Rs. 60, being the amount of value for 15 maunds of jute at the bazaar rate of Rs. 4 per maund prevailing in Bhadra of the year 1278 B. S., together with costs and interest. Dated Aughran 1279.

I, the plaintiff in this plaint, do declare that what is stated in it is true to the best of my information and belief. This is signed at Jamalpara on the 16th Aughran 1279 B. S.

PORBASSOO SHEIK.

PORBASSOO SHEIK.

I, Namajoo Sonar, son of Menda Sheik, deceased, inhabitant of Kajlapara, pergunnah Patiladha, Station Dewangune, do execute this *sattapatra* in 1277 B.S. I do hereby take loan of Rs. 20 from you as advance on account of the supply of jute. I do stipulate to take back this *sattapatra* after realization of the full amount by means of delivering, on the 30th Bhadra 1278 B. S., at once and in one and the same measure the total quantity of 15 maunds of jute, at the rate of 30 seers per rupee. If I deliver that jute gradually instead of at once and in one and the same measure, I will cause the same, whenever any quantity of it will be delivered by me, to be entered on the back of this *sattapatra* and credited on my account. I do agree by this *sattapatra* that if I fail to deliver that jute according to its terms, I will pay the amount of advance, together with the damages for any loss that you would incur, at the rate at which the other *mahajuns* (the jute merchants) would sell their jute in that year. I do further agree by this *sattapatra* that if I produce any other receipt or proof except the entry on the back of this instrument, it will be null and void. Dated 12th Chaitra 1277 B.S.

WITNESS,

The writer, SREE NOJOO MADDIN SIRDAR,
Inhabitant of Tickajali.

SREE KANAI SHAIKH,
Inhabitant of Kajlapara.

SREE MONEE PRADHAN,
Inhabitant of Kajlapara.

SREE JHATA SHAIKH,
Inhabitant of Tickajali.

APPENDIX E.

Statement showing the price of food-grains and unskilled labor in the districts comprising the Provinces of Bengal, from the year 1861 to 1872.

Division	Districts.	1861.	1862.	1863.	1864.	1865.	1866.	1867.	1868.	1869.	1870.	1871.	1872.
Burdwan.	Common rice	26 250	21 290	20 437	27 462	26 125	19 797	15 961	27 992	25 000	25 162	24 690	22 006
	Pulses	Rs. A. P. 0 3 3	Rs. A. P. 0 3 3	Rs. A. P. 0 3 3	Rs. A. P. 0 3 3	Rs. A. P. 0 3 3	Rs. A. P. 0 3 3	Rs. A. P. 0 4 3	Rs. A. P. 0 3 3	Rs. A. P. 0 3 3	Rs. A. P. 0 3 3	Rs. A. P. 0 3 3	Rs. A. P. 0 3 3
	Wages of unskilled laborer	...	...	...	...	...	...	...	...	...	...	...	...
	Common rice	41 980	47 065	51 391	37 924	37 924	18 734	29 337	31 724	32 424	33 391	33 062	No data.
	Pulses	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0
	Wages of unskilled laborer	...	...	...	...	...	...	...	...	...	...	...	...
	Common rice	...	33 924	37 490	27 462	27 462	11 388	27 693	27 693	27 693	27 693	27 693	No data.
	Pulses	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0
	Wages of unskilled laborer	...	...	...	...	...	...	...	...	...	...	...	...
	Common rice	31 957	31 724	31 491	22 095	22 095	9 554	20 900	23 590	26 583	26 583	24 000	23 000
Burdwan.	Pulses	Rs. A. P. 0 1 9	Rs. A. P. 0 1 9	Rs. A. P. 0 1 9	Rs. A. P. 0 1 9	Rs. A. P. 0 1 9	Rs. A. P. 0 1 9	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0	Rs. A. P. 0 2 0
	Wages of unskilled laborer	...	...	...	...	...	...	...	...	...	...	...	...
	Common rice	23	21	20	22	12	15	18	20	21	22	16 532	10 583
	Pulses	Rs. A. P. 0 2 3	Rs. A. P. 0 2 3	Rs. A. P. 0 2 3	Rs. A. P. 0 2 3	Rs. A. P. 0 2 3	Rs. A. P. 0 2 3	Rs. A. P. 0 2 3	Rs. A. P. 0 2 3	Rs. A. P. 0 2 3	Rs. A. P. 0 2 3	Rs. A. P. 0 2 3	Rs. A. P. 0 2 3
	Wages of unskilled laborer	...	...	...	...	...	...	...	...	...	...	...	...
	Common rice	16 325	15 390	11 225	20 411	17 348	15 398	20 411	20 411	22 451	21 493	15 335	16 000
	Pulses	Rs. A. P. 0 5 0	Rs. A. P. 0 5 0	Rs. A. P. 0 5 0	Rs. A. P. 0 5 0	Rs. A. P. 0 5 0	Rs. A. P. 0 5 0	Rs. A. P. 0 5 0	Rs. A. P. 0 5 0	Rs. A. P. 0 5 0	Rs. A. P. 0 5 0	Rs. A. P. 0 5 0	Rs. A. P. 0 5 0
	Wages of unskilled laborer	...	...	...	...	...	...	...	...	...	...	...	...
	Common rice	19 533	16 533	16 533	15 129	15 129	11 405	16 760	14 987	15 129	15 939	16 839	No data.
	Pulses	Rs. A. P. 0 3 2	Rs. A. P. 0 3 2	Rs. A. P. 0 3 2	Rs. A. P. 0 3 2	Rs. A. P. 0 3 2	Rs. A. P. 0 3 2	Rs. A. P. 0 3 2	Rs. A. P. 0 3 2	Rs. A. P. 0 3 2	Rs. A. P. 0 3 2	Rs. A. P. 0 3 2	Rs. A. P. 0 3 2
Calcutta, Howrah	Wages of unskilled laborer	...	...	...	...	...	...	...	...	...	...	...	...
	Common rice	29 327	24 129	27 030	27 462	27 462	15 062	13 695	2 336	22 333	17 727	20 000	20 000
	Pulses	Rs. A. P. 0 2 8	Rs. A. P. 0 2 8	Rs. A. P. 0 2 8	Rs. A. P. 0 2 8	Rs. A. P. 0 2 8	Rs. A. P. 0 2 8	Rs. A. P. 0 2 8	Rs. A. P. 0 2 8	Rs. A. P. 0 2 8	Rs. A. P. 0 2 8	Rs. A. P. 0 2 8	Rs. A. P. 0 2 8
	Wages of unskilled laborer	...	...	...	...	...	...	...	...	...	...	...	...
	Common rice	19 630	19 630	19 630	19 630	19 630	11 416	29 037	19 039	19 039	19 039	24 125	26 000
	Pulses	Rs. A. P. 0 2 5	Rs. A. P. 0 2 5	Rs. A. P. 0 2 5	Rs. A. P. 0 2 5	Rs. A. P. 0 2 5	Rs. A. P. 0 2 5	Rs. A. P. 0 2 5	Rs. A. P. 0 2 5	Rs. A. P. 0 2 5	Rs. A. P. 0 2 5	Rs. A. P. 0 2 5	Rs. A. P. 0 2 5
	Wages of unskilled laborer	...	...	...	...	...	...	...	...	...	...	...	...
	Common rice	15 961	15 961	15 961	15 961	15 961	15 961	15 961	15 961	15 961	15 961	15 961	15 961
	Pulses	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0
	Wages of unskilled laborer	...	...	...	...	...	...	...	...	...	...	...	...
Presidency.	Common rice	17 944	17 944	17 944	17 944	17 944	17 944	17 944	17 944	17 944	17 944	17 944	18
	Pulses	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0
	Wages of unskilled laborer	...	...	...	...	...	...	...	...	...	...	...	...
	Common rice	15 961	15 961	15 961	15 961	15 961	15 961	15 961	15 961	15 961	15 961	15 961	15 961
	Pulses	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0
	Wages of unskilled laborer	...	...	...	...	...	...	...	...	...	...	...	...
	Common rice	15 961	15 961	15 961	15 961	15 961	15 961	15 961	15 961	15 961	15 961	15 961	15 961
	Pulses	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0
	Wages of unskilled laborer	...	...	...	...	...	...	...	...	...	...	...	...
	Common rice	15 961	15 961	15 961	15 961	15 961	15 961	15 961	15 961	15 961	15 961	15 961	15 961
	Pulses	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0	Rs. A. P. 0 4 0

Statement showing the price of food-grains and unskilled labor in the districts comprising the Provinces of Bengal from the year 1861 to 1872.—(Continued.)

District.	1861.	1862.	1863.	1864.	1865.	1866.	1867.	1868.	1869.	1870.	1871.	1872.
Dinapore	Common rice ... Pulses ... Wages of unskilled labor ...	32,530 26,634 Rs. A. P. 0 1 7	31,533 26,614 Rs. A. P. 0 1 7	27,534 24,696 Rs. A. P. 0 1 10	17,205 15,325 Rs. A. P. 0 2 5	15,543 13,747 Rs. A. P. 0 2 5	21,062 18,602 Rs. A. P. 0 2 5	33,288 19,259 Rs. A. P. 0 2 5	26,611 13,717 Rs. A. P. 0 2 8	26,634 13,717 Rs. A. P. 0 2 8	34,570	26,50
Moorshedabad, Behar- pore	Common rice ... Pulses ... Wages of unskilled labor ...	28,535 26,634 Rs. A. P. 0 2 5	28,535 26,634 Rs. A. P. 0 2 5	17,527 15,325 Rs. A. P. 0 2 5	17,527 15,325 Rs. A. P. 0 2 5	17,527 15,325 Rs. A. P. 0 2 5	25,327 23,627 Rs. A. P. 0 2 5	25,327 23,627 Rs. A. P. 0 2 5	25,327 23,627 Rs. A. P. 0 2 5	25,327 23,627 Rs. A. P. 0 2 5	25,327	20,00
Malah	Common rice ... Pulses ... Wages of unskilled labor ...	45,784 43,259 Rs. A. P. 0 2 0	45,784 43,259 Rs. A. P. 0 2 0	31,731 30,469 Rs. A. P. 0 2 6	17,400 17,400 Rs. A. P. 0 3 0	25,512 23,751 Rs. A. P. 0 3 0	30,587 28,751 Rs. A. P. 0 3 0	31,544 29,712 Rs. A. P. 0 3 0	30,587 28,751 Rs. A. P. 0 3 0	30,587 28,751 Rs. A. P. 0 3 0	28	24
Rajahmundry, Bantah	Common rice ... Pulses ... Wages of unskilled labor ...	31,901 31,901 Rs. A. P. 0 2 5	31,901 31,901 Rs. A. P. 0 2 5	11,198 17,206 Rs. A. P. 0 2 5	13,905 20,410 Rs. A. P. 0 2 5	13,905 20,410 Rs. A. P. 0 2 5	20,118 27,042 Rs. A. P. 0 2 5	25,904 17,414 Rs. A. P. 0 2 5	25,904 17,414 Rs. A. P. 0 2 5	25,904 17,414 Rs. A. P. 0 2 5	27,157	24
Rangore, Maleganuz	Common rice ... Pulses ... Wages of unskilled labor ...	32,538 14,928 Rs. A. P. 0 1 7	32,538 14,928 Rs. A. P. 0 1 7	27,942 17,129 Rs. A. P. 0 2 1	18,928 17,129 Rs. A. P. 0 2 1	18,928 17,129 Rs. A. P. 0 2 1	17,144 13,462 Rs. A. P. 0 2 5	25,900 14,928 Rs. A. P. 0 2 5	21,093 15,861 Rs. A. P. 0 2 5	25,910 15,861 Rs. A. P. 0 2 5	23,411	24,935
Bograh	Common rice ... Pulses ... Wages of unskilled labor ...	31,891 11,198 Rs. A. P. 0 2 0	31,891 11,198 Rs. A. P. 0 2 0	31,401 17,129 Rs. A. P. 0 2 1	13,905 17,129 Rs. A. P. 0 2 1	13,905 17,129 Rs. A. P. 0 2 1	23,310 11,198 Rs. A. P. 0 2 6	30,571 11,198 Rs. A. P. 0 2 6	27,571 15,795 Rs. A. P. 0 3 0	26,186 16,791 Rs. A. P. 0 3 0	41,25	42,125
Pabna	Common rice ... Pulses ... Wages of unskilled labor ...	32,535 27,962 Rs. A. P. 0 3 2	32,535 27,962 Rs. A. P. 0 3 2	30,934 27,962 Rs. A. P. 0 2 1	10,457 27,962 Rs. A. P. 0 2 1	20,944 27,962 Rs. A. P. 0 2 1	24,455 27,962 Rs. A. P. 0 2 5	20,944 27,962 Rs. A. P. 0 2 5	22,393 27,962 Rs. A. P. 0 2 1	22,393 27,962 Rs. A. P. 0 2 1	29,000	20,000
Gowalparah	Common rice ... Pulses ... Wages of unskilled labor ...	27,962 16,100 Rs. A. P. 0 2 0	27,962 16,100 Rs. A. P. 0 2 0	30,236 17,334 Rs. A. P. 0 2 3	14,928 17,334 Rs. A. P. 0 2 8	18,921 17,334 Rs. A. P. 0 2 8	18,921 16,211 Rs. A. P. 0 3 2	20,937 15,900 Rs. A. P. 0 3 2	20,937 15,900 Rs. A. P. 0 3 2	19,681 17,905 Rs. A. P. 0 3 2	18	20
Darjeeling	Common rice ... Pulses ... Wages of unskilled labor ...	11,196 11,196 Rs. A. P. 0 4 0	11,196 11,196 Rs. A. P. 0 4 0	...	8,928 6,931 Rs. A. P. 0 4 0	9,331 6,931 Rs. A. P. 0 4 0	9,331 6,931 Rs. A. P. 0 4 0	18,928 6,931 Rs. A. P. 0 4 0	18,928 6,931 Rs. A. P. 0 4 0	18,928 6,931 Rs. A. P. 0 4 0	15,235	15,235
Decca	Common rice ... Pulses ... Wages of unskilled labor ...	37,203 27,192 Rs. A. P. 0 3 6	37,203 27,192 Rs. A. P. 0 3 6	32,217 27,961 Rs. A. P. 0 4 6	17,568 22,421 Rs. A. P. 0 4 6	11,525 17,531 Rs. A. P. 0 4 6	23,217 17,531 Rs. A. P. 0 4 6	20,957 19,644 Rs. A. P. 0 4 6	20,957 19,644 Rs. A. P. 0 4 6	25,962 18,797 Rs. A. P. 0 5 0	20,75	20,75
Buckerguz, Burtan	Common rice ... Pulses ... Wages of unskilled labor ...	24,299 17,767 Rs. A. P. 0 2 1	24,299 17,767 Rs. A. P. 0 2 1	22,529 17,767 Rs. A. P. 0 2 1	21,840 14,928 Rs. A. P. 0 2 1	10,750 14,928 Rs. A. P. 0 2 1	15,973 20,927 Rs. A. P. 0 2 1	19,320 22,172 Rs. A. P. 0 2 1	18,777 23,992 Rs. A. P. 0 2 1	22,276 25,869 Rs. A. P. 0 2 1	25,89	14,545

Statement showing the price of food-grains and unskilled labor in the districts comprising the Provinces of Bengal from the year 1861 to 1872.—(Continued.)

Districts.	1861.	1862.	1863.	1864.	1865.	1867.	1868.	1869.	1870.	1871.	1872.
Division.											
PATNA.—(Contd.)											
Sarun ...	24,558 Rs. A. P. 0 1 1	25,675 Rs. A. P. 0 1 1	25,675 Rs. A. P. 0 1 1	19,125 Rs. A. P. 0 1 1	5,464 Rs. A. P. 0 1 1	16,331 Rs. A. P. 0 1 1	17,391 Rs. A. P. 0 1 3	10,391 Rs. A. P. 0 1 3	17,391 Rs. A. P. 0 1 3	19,480 Rs. A. P. 0 1 3	19
Chumpran, Mithari	15,651 Rs. A. P. 0 2 6	16,734 Rs. A. P. 0 2 6	17,227 Rs. A. P. 0 2 6	16,521 Rs. A. P. 0 2 6	11,106 Rs. A. P. 0 2 6	16,521 Rs. A. P. 0 2 6	21,429 Rs. A. P. 0 2 6	24,560 Rs. A. P. 0 2 6	13,953 Rs. A. P. 0 2 6	15,681 Rs. A. P. 0 2 6	27,00
Monghyr	23,727 Rs. A. P. 0 2 6	24,352 Rs. A. P. 0 2 6	24,352 Rs. A. P. 0 2 6	15,024 Rs. A. P. 0 2 6	17,349 Rs. A. P. 0 2 6	21,411 Rs. A. P. 0 2 6	19,135 Rs. A. P. 0 2 6	2,495 Rs. A. P. 0 2 6	25,423 Rs. A. P. 0 2 6	25,423 Rs. A. P. 0 2 6	31,300
Bangulpore	20,976 Rs. A. P. 0 2 6	20,976 Rs. A. P. 0 2 6	21,961 Rs. A. P. 0 2 6	22,731 Rs. A. P. 0 2 6	15,306 Rs. A. P. 0 2 6	15,306 Rs. A. P. 0 2 6	15,306 Rs. A. P. 0 2 6	15,306 Rs. A. P. 0 2 6	19,083 Rs. A. P. 0 2 6	19,083 Rs. A. P. 0 2 6	30,00
Purneah	20,976 Rs. A. P. 0 2 6	20,976 Rs. A. P. 0 2 6	20,976 Rs. A. P. 0 2 6	20,976 Rs. A. P. 0 2 6	20,976 Rs. A. P. 0 2 6	20,976 Rs. A. P. 0 2 6	20,976 Rs. A. P. 0 2 6	20,976 Rs. A. P. 0 2 6	20,976 Rs. A. P. 0 2 6	20,976 Rs. A. P. 0 2 6	30,00
Deoghur	25,471 Rs. A. P. 0 1 6	25,471 Rs. A. P. 0 1 6	25,471 Rs. A. P. 0 1 6	15,079 Rs. A. P. 0 1 6	15,079 Rs. A. P. 0 1 6	15,079 Rs. A. P. 0 1 6	15,079 Rs. A. P. 0 1 6	15,079 Rs. A. P. 0 1 6	15,079 Rs. A. P. 0 1 6	15,079 Rs. A. P. 0 1 6	No data
Doomka	41,789 Rs. A. P. 0 1 6	41,789 Rs. A. P. 0 1 6	41,789 Rs. A. P. 0 1 6	41,789 Rs. A. P. 0 1 6	41,789 Rs. A. P. 0 1 6	41,789 Rs. A. P. 0 1 6	41,789 Rs. A. P. 0 1 6	41,789 Rs. A. P. 0 1 6	41,789 Rs. A. P. 0 1 6	41,789 Rs. A. P. 0 1 6	16
Godia	25,231 Rs. A. P. 0 1 6	25,231 Rs. A. P. 0 1 6	25,231 Rs. A. P. 0 1 6	25,231 Rs. A. P. 0 1 6	25,231 Rs. A. P. 0 1 6	25,231 Rs. A. P. 0 1 6	25,231 Rs. A. P. 0 1 6	25,231 Rs. A. P. 0 1 6	25,231 Rs. A. P. 0 1 6	25,231 Rs. A. P. 0 1 6	No data
Baincha.	21,460 Rs. A. P. 0 5 0	21,460 Rs. A. P. 0 5 0	21,460 Rs. A. P. 0 5 0	21,460 Rs. A. P. 0 5 0	21,460 Rs. A. P. 0 5 0	21,460 Rs. A. P. 0 5 0	21,460 Rs. A. P. 0 5 0	21,460 Rs. A. P. 0 5 0	21,460 Rs. A. P. 0 5 0	21,460 Rs. A. P. 0 5 0	No data

BUAOUTPORE

APPENDIX F.

Statement showing the Quantity of Jute carried down in Country Boats which passed the under-noted Toll Stations during the past five years.

	Year.	Quantity.	Whence carried down.	REMARKS.
		Mds.		
Circular Canal	1868-69	18,83,050		
	1869-70	17,80,692		
	1870-71	18,03,030		
	1871-72	20,06,775		
	1872-73	13,98,460	Serajungo, Mymensing, Dacca, Furrudpore, Jessore, Nuddoa, and 24-Pergunnahs.	
Tolly's Nullah	1868-69	15,700		
	1869-70	63,579		
	1870-71	69,300		
	1871-72	2,16,575		
	1872-73	1,70,132		
Bhagirutty River, Jungi- pore Toll Station.	1868-69	8,411		
	1869-70	2,427		
	1870-71	7,888	The bulk of the traffic is from Furrueah, in North Bengal.	
	1871-72	29,170		
	1872-73	15,471		
Bhagirutty River, Nuddoa Toll Station.	1868-69	19,050		
	1869-70	8,425		
	1870-71	30,073	Entirely from the district of Moorsshedabad.	
	1871-72	34,775		
	1872-73	14,775		
Jellinghee River	1868-69	1,17,075		
	1869-70	65,275		
	1870-71	82,700	From Dinagepore and Bungepore.	
	1871-72	1,08,651		
	1872-73	39,000		
Matabbanganh River	1868-69	5,18,296	*North. Mds.	* Districts of Bengal.
	1869-70	6,62,707	*East. Mds.	
	1870-71	5,01,575	*North-East. Mds.	
	1871-72	7,60,898	Total. Mds.	
	1872-73	6,08,070		
			1,04,854	
			2,915	
			4,10,527	
			5,18,296	
			1,24,958	
			6,034	
			5,31,715	
			6,02,707	
			1,40,306	
			6,445	
			5,54,704	
			5,01,575	
			2,36,307	
			2,040	
			5,22,401	
			7,60,898	
			2,41,745	
			3,275	
			3,63,060	
			6,08,070	

APPENDIX G.

Statement showing the Quantity of Jute brought down by the Eastern Bengal Railway Company, the New River Steam Navigation Company, and the India General Steam Navigation Company into Calcutta, from the year 1866 to 1873.

YEAR.	By or through whom.	Quantity.		Total.		REMARKS.
		Mds.	Srs.	Mds.	Srs.	
1866	Eastern Bengal Railway Company	421,473	0	421,473	0	
1867	Ditto ditto	964,858	0	964,858	0	
1868	Ditto ditto	1,555,500	0	1,555,500	0	
1869	Ditto ditto	1,456,438	0	1,456,438	0	
1870	Ditto ditto	1,082,473	0			
	New River Steam Navigation Company	285,808	8	2,512,920	8	Assam Line. Cachhar Line.
	India General ditto	235,186	0			
	Ditto ditto	9,492	0			
1871	Eastern Bengal Railway Company	1,747,402	0	2,478,920	21	Assam Line. Cachhar Line.
	New River Steam Navigation Company	326,116	21			
	India General ditto	264,434	0			
	Ditto ditto	140,998	0			
1872	Eastern Bengal Railway Company	2,003,715	0	3,952,521	38	Assam Line. Cachhar Line.
	New River Steam Navigation Company	278,322	38			
	India General ditto	331,271	0			
	Ditto ditto	430,615	0			
1873	New River Steam Navigation Company	140,495	6	441,448	6	Assam Line. Cachhar Line.
	India General ditto	138,294	0			
	Ditto ditto	153,659	0			

Statement showing the Quantity of Jute, and Hemp, Jute, and Flax received at, and forwarded from, Calcutta and Howrah, from July 1870 to 30th June, 1873, by the East Indian Railway Company.

	Up.	Down.	Grand Total.
	Total forwarded.	Total received.	
<i>Jute.</i>	Mds. Srs.	Mds. Srs.	Mds. Srs.
July 1870 to December 31st, 1870	283 20	990 56	1,274 16
<i>Hemp, Jute, and Flax.</i>			
31st December, 1871	518 16	1,425 24	1,944 0
January to June, 1872	255 6	4,052 28	4,307 34
July to December, 1872	1,378 14	433 38	1,817 4
January to June, 1873	105 12	6,151 30	6,257 10

N.B.—Previous to July 1870, the traffic in hemp, jute, and flax was so small that no separate heading was maintained of them and the separate heading of jute only appears in 1870, since which the general heading of hemp and flax has been adopted.

APPENDIX H.

*Statement showing the Quantity of Jute exported from Calcutta, from the year 1828-2
1831-35 (as obtained from the Board's Office).*

	1828-1829.		1829-1830.		1830-1831.		1831-1832.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	M. S. C.	Rs. A. P.	M. S. C.	Rs. A. P.	M. S. C.	Rs. A. P.	M. S. C.	Rs.
Great Britain	426 39 0	620 14 9	2,233 0 0	3,970 12 0	9,552 8 0	20,109 11 0	20,665 26 0	56,323
United States ... ..	...	...	127 20 0	191 4 0	917 6 0	2,111 13 0	27 16 0	54
Batavia ... ..	...	...	1 26 0	7 8 0	...	...	...	...
Bombay ... ..	...	...	...	...	...	...	1,095 35 0	1,917
America, North ... ..	...	...	...	...	...	...	1,797 16 2	5,315
Total	426 39 0	620 14 9	2,422 6 0	4,169 8 0	10,469 12 0	22,221 8 0	32,526 12 2	63,611

	1832-1833.		1833-1834.		1834-1835.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	M. S. C.	Rs. A. P.	M. S. C.	Rs. A. P.	M. S. C.	Rs. A. P.
Great Britain	32,883 27 4	65,626 6 4	6,1314 1 15	1,15,263 7 9	31,328 34 11	53,915 5 0
Bombay	1,662 0 8	2,143 13 3	559 15 12	1,128 12 0	...	...
Ceylon ... ..	...	...	180 0 0	360 0 0	...	...
America, North ... ..	...	...	...	...	7 10 0	11 1 6
Nova Scotia ... ..	...	...	...	...	14 24 6	35 4 3
Total	34,545 36 12	65,770 3	7,62,044 17 11	1,16,762 3 9	31,350 36 4	53,941 10 9

Statement showing the Total Exports of Jute from Calcutta, from the year 1835-36 (the earliest period on record at the Calcutta Custom House) to the year 1864-65.

WHITHER EXPORTED.		1835-36.		1836-37.		1837-38.		1838-39.	
		Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.
FOREIGN PORTS.	United Kingdom	10,576	31,470	1,47,349	3,87,081	83,235	1,70,519	1,01,023	1,80,282
	America, North... ..	1,579	4,732	8,044	20,794	2,398	5,776	3,941	8,381
	Australia ... ..	.....	.....	81	206	219	463	70	337
	Capo ... ..	.....	.....	.....	.....	635	1,277	.....	.....
	Ceylon	15	47	70	335	12	60	.....	.....
	France ... ..	.....	.....	3,072	7,607	309	606	2,000	3,769
	Java ... ..	.....	.....	.....	.....	23	102	.....	.....
	Penang and Singapore ...	24	106	2	10	22	95	.....	.....
BRITISH INDIAN PORTS.	Coast of Coromandel ...	232	545	1,468	6,028	1,888	5,003	531	1,093
	Ditto of Malabar ... ..	.....	.....	5,574	14,006	1,960	3,809	.....	.....
	Pegu ... ..	.....	.....	.....	.....	90	342	8	32

WHITHER EXPORTED.		1839-40.		1840-41.		1841-42.		1842-43.	
		Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.
FOREIGN PORTS.	United Kingdom	78,824	1,47,530	60,770	1,15,698	1,05,490	2,27,882	2,02,024	4,35,264
	America, North ... ..	.....	.....	536	1,003	9,508	20,451	8,648	20,502
	Australia	341	638	9	22	.....	.....	.....	.....
	Bourbon	5	10	.....	.....	536	1,185	.....	.....
	Bremen ... ..	.....	.....	13	25	.....	.....	.....	.....
	France	832	1,558	.....	.....	81	152	.....	.....
	Java ... ..	.....	.....	.....	.....	.....	.....	82	504
	Penang and Singapore ...	16	30	.....	.....	.....	.....	75	279
BRITISH INDIAN PORTS.	Coast of Coromandel ...	1,119	2,657	2,308	4,489	1,540	3,450	3,083	7,584
	Ditto of Malabar	268	501	20	48	.....	.....	572	3,400

WHITHER EXPORTED.		1843-44.		1844-45.		1845-46.		1846-47.	
		Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.
FOREIGN PORTS.	United Kingdom	2,11,820	5,35,412	2,56,437	5,60,025	1,99,403	4,25,366	1,69,431	3,44,541
	America, North	201	512	2,180	4,823	2,059	5,009	851	1,740
	Arabian and Persian Gulfs ...	134	342	.....	.....	.....	.....	.....	.....
	Ceylon ... ..	.....	.....	.....	.....	275	848	67	157
	China ... ..	.....	.....	278	616	.....	.....	.....	.....
	France ... ..	.....	.....	.....	.....	9,708	17,362	21,048	42,826
	Hamburg ... ..	.....	.....	.....	.....	225	619	134	273
	Java ... ..	.....	.....	.....	.....	222	1,211	.....	.....
	Mauritius... ..	268	684	.....	.....	400	1,060	.....	.....
	New South Wales ... ..	.....	.....	.....	.....	.....	.....	1,660	2,226
	Penang and Singapore ...	.....	.....	.....	.....	.....	.....	23	100
	Portugal	279	711	.....	.....	.....	.....	.....	.....
BRITISH INDIAN PORTS.	Coast of Coromandel ...	2,290	6,865	220	561	678	2,044	203	1,267
	Ditto of Malabar ... ..	.....	.....	.....	.....	637	1,968	.....	.....

WHITHER EXPORTED.		1847-48.		1848-49.		1849-50.		1850-51.	
		Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.
FOREIGN PORTS	United Kingdom	2,40,144	5,04,886	8,28,948	6,71,838	3,64,906	8,23,835	5,64,907	19,10,086
	America North... ..	536	1,094	7,231	14,766	24,465	61,901	6,790	22,825
	Antwerp ... ..	.....	.....	99	137	.....	.....	.....	.....
	France	46,203	88,113	37	77	1,600	3,779	10,234	34,414
	Hamburg .. ..	.....	.....	134	273	.....	.....	94	315
	New South Wales ... ..	.....	.....	.....	.....	.....	.....	40	135
	Penang and Singapore ... ..	.....	.....	13	27	185	377	.....	.....
	Trieste ... ..	.....	.....	.....	.....	.....	.....	204	690
BRITISH INDIAN PORT.	Coast of Coromandel ... ..	.....	.....	1,454	2,970	648	1,323	439	1,350

WHITHER EXPORTED.		1851-52.		1852-53.		1853-54.		1854-55.	
		Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.
FOREIGN PORTS	United Kingdom	4,90,606	16,89,741	3,12,764	10,13,795	3,69,944	11,78,132	5,65,740	18,45,884
	America, North	18,986	63,792	18,109	58,044	96,729	3,04,516	93,700	3,04,318
	Arabian and Persian Gulfs ... ..	.....	.....	.....	.....	1	6	.....	.....
	Ceylon ... ..	.....	.....	.....	.....	.....	.....	1,077	3,417
	France	16,738	56,250	16,231	51,780	30,815	1,26,565	34,560	1,22,801
	Mauritius ... ..	.....	.....	.....	.....	600	2,125	4,018	12,750
	New South Wales ... ..	.....	.....	.....	.....	48	173	31	102
	Penang and Singapore ... ..	.....	.....	26	85	72	290	26	82
	Rotterdam ... ..	.....	.....	207	850	.....	.....	.....	.....
BRITISH INDIAN PORT	Coast of Coromandel	117	540	1,428	4,706	1,357	4,066	3,221	9,724

WHITHER EXPORTED.		1855-56.		1856-57.		1857-58.		1858-59.	
		Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.
FOREIGN PORTS	United Kingdom	7,65,659	28,54,090	4,02,343	20,11,223	6,70,217	25,12,719	1,20,962*	45,15,886
	America, North	53,698	2,00,750	1,12,170	4,58,031	68,791	2,38,550	82,769	3,00,081
	Ditto, South ... ..	.....	.....	.....	.....	.....	.....	1,607	6,000
	Bremen	808	3,020	.....	.....	.....	.....	.....	.....
	Ceylon	698	3,610	2,264	9,293	3,817	14,250	2,762	10,311
	China	1,546	5,803	1,224	5,000	.....	.....	.....	.....
	France	55,539	2,07,050	64,610	2,63,830	45,020	2,42,740	1,08,605	4,05,460
	Hamburg	214	800	.....	.....	629	2,350	.....	.....
	Java ... ..	.....	.....	5	20	.....	.....	56	210
	Malta ... ..	.....	.....	97	400	.....	.....	.....	.....
	Mauritius	792	3,450	.....	.....	.....	.....	.....	.....
	Penang and Singapore	2,025	7,575	37	150	37	250	38	140
	Suez ... ..	.....	.....	.....	.....	.....	.....	803	3,000
BRITISH INDIAN PORTS	Coast of Coromandel ... ..	.....	.....	381	1,557	276	1,150	268	1,000
	Ditto of Malabar ... ..	.....	.....	61	250	.....	.....	80	300
	Pegu ... ..	.....	.....	.....	.....	.....	.....	20	108

* See, in Board's published Volume, whence the figures have been taken. The quantity is far too small as compared with the value. In the "Commercial Annual"—a private publication, for some period—from May to April—the quantity given in Indian mounds 16,93,883.

WHITHER EXPORTED.		1859-60.		1860-61.		1861-62.	
		Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.
FOREIGN PORTS	United Kingdom	6,82,304	26,05,437	9,23,038	34,03,044	11,20,004	48,97,612
	America, North	23,777	88,711	87,005	2,13,769	49,790	2,08,083
	Arabian and Persian Gulfs	670	2,500	1,387	5,200	.....	.....
	Bremen .. .. .	.....	.....	.....	.....	2,737	14,388
	Ceylon	4,004	14,950	5,000	16,800	7,324	28,405
	China .. .. .	.....	.....	480	1,800	.....	.....
	France	50,086	1,80,990	1,00,051	3,75,116	38,351	1,60,092
	Hamburg	225	480	.....	.....	.....	.....
	Maldives .. .. .	.....	.....	2,606	10,000	.....	.....
	Malta .. .. .	.....	.....	.....	.....	134	750
	Penang and Singapore	65	260	1,733	6,500	51	200
	Saint Helena .. .. .	.....	.....	.....	.....	12,002	44,477
BRITISH INDIAN PORTS	Coast of Coromandel	525	2,000	1,764	6,900	5,445	25,591
	Ditto of Malabar .. .. .	.....	.....	2,133	8,000	72,520	3,16,235
	Pegu .. .. .	.....	.....	6	24	318	1,387

WHITHER EXPORTED.		1862-63.		1863-64.		1864-65.	
		Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.
FOREIGN PORTS	United Kingdom	12,19,903	72,17,302	25,92,780	1,44,88,304	20,24,407	1,26,17,102
	America, North	21,163	1,25,138	53,268	2,02,806	42,001	2,66,696
	Ditto, South .. .. .	.....	.....	.....	.....	4,821	22,500
	Antwerp .. .. .	.....	.....	586	2,250	.....	.....
	Arabian and Persian Gulfs	1	7	.....	.....	.....	.....
	Bremen	7,481	50,382	8,255	42,061	.....	.....
	Ceylon	4,182	21,767	1,071	6,429	4,555	27,907
	France	13,626	86,087	56,305	2,33,584	23,833	1,42,400
	Genoa .. .. .	.....	.....	.....	.....	27	161
	Hamburg	181	802	.....	.....	.....	.....
	New South Wales	100	602	37	225	134	1,071
	Penang and Singapore	67	351	300	2,244	.....	.....
BRITISH INDIAN PORTS	Coast of Coromandel	7,859	60,200	6,801	47,745	18,467	1,08,407
	Ditto of Malabar	87,650	5,47,701	1,39,212	8,62,094	5,09,231	30,29,911
	Pegu	13	81	63	500	90	740

Statement showing the Exports of Jute, Jute Cuttings and Jute Rejections from Calcutta, from the year 1865-66 to 1872-73.

WHITHER EXPORTED.		1865-66.				1866-67.			
		Jute.		Jute Rejections.		Jute.		Jute Rejections.	
		Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.
FOREIGN PORTS	United Kingdom	20,24,844	71,10,134	2,61,211	1,83,390	15,58,708	60,73,983	53,578	94,500
	America, North	10,90,654	3,80,463	10,491	9,535	1,10,906	3,90,925	21,411	9,775
	Bremen .. .. .	.....	.....	.....	.....	2,004	7,500	.....	.....
	Ceylon	3,281	12,250	.....	.....	2,678	10,000	.....	.....
	China .. .. .	.....	.....	22	74	323	2,137	.....	.....
	France	4,277	15,970	9	4	5,887	21,080	.....	.....
	New South Wales	1,007	4,030	.....	.....	.....	.....	.....	.....
	Strait Settlements	24	90	.....	.....	.....	.....	.....	.....
BRITISH INDIAN PORTS	Bombay	92,840	2,40,031	.....	.....	83,083	3,21,570	.....	.....
	Madras	37,050	1,54,790	.....	.....	536	2,000	.....	.....
	Pegu	260	1,087	.....	.....	104	404	.....	.....

WHITHER EXPORTED.		1867-68.				1868-69.			
		Jute.		Jute Rejections.		Jute.		Jute Rejections.	
		Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.
FOREIGN PORTS.	United Kingdom	21,132.69	4,30,50,810	37,621	1,05,769	27,55,288	1,05,57,591	2,22,207	5,92,559
	America, North	91,405	5,00,576	31,867	50,549	1,80,340	11,50,967	1,81,911	4,24,861
	Bourbon	1,330	8,030	.....	.....	.....	.....	.....	.....
	Ceylon	1,389	7,009	.....	.....	5,282	31,557	.....	.....
	China	27	161	.....	.....	.....	.....	.....	.....
	France	14,022	92,192	286	714	5,304	31,822	.....	.....
	Straits Settlements	373	850	7	66	203	1,880	.....	.....
BRITISH INDIAN PORTS.	Bombay	1,82,183	11,74,171	.....	.....	2,14,080	12,98,626	.....	.....
	Madras	7,040	42,911	.....	.....	40,050	1,03,221	.....	.....
	Pegu	215	1,141	123	82	272	2,678	.....	.....

WHITHER EXPORTED.		1869-70.				1870-71.			
		Jute.		Jute Rejections.		Jute.		Jute Rejections.	
		Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.
FOREIGN PORTS.	United Kingdom	28,31,567	1,73,97,530	1,24,834	4,37,678	31,23,900	2,22,58,472	1,33,191	6,44,715
	America, North	1,36,328	8,90,229	2,01,000	6,05,387	1,90,085	14,41,704	2,87,503	12,98,638
	Ceylon	3,683	24,082	.....	.....	1,921	13,176	.....	.....
	China	40	333	.....	.....	4,314	38,901	.....	.....
	France	48,734	3,24,202	491	1,710	4,039	28,275	.....	.....
	Hamburg	2,545	17,813	.....	.....	.....	.....	.....	.....
	Italy ... ..	.....	.....	.....	.....	328	2,945	.....	.....
	Port Said ... ..	.....	.....	.....	.....	8	72	.....	.....
	Straits Settlements	11	63	.....	.....	165	1,341	.....	.....
	Trieste	67	469	.....	.....	54	482	.....	.....
BRITISH INDIAN PORTS.	Bombay	76,673	4,65,338	.....	.....	16,199	1,00,209	.....	.....
	Madras	11,627	75,170	.....	.....	699	4,150	.....	.....
	Peru	1,075	6,861	.....	.....	1,725	18,606	.....	.....

WHITHER EXPORTED.		1871-72.			
		Jute.		Jute Cuttings.	Jute Rejections.
		Cwt.	Rs.	Cwt.	Rs.
FOREIGN PORTS.	United Kingdom	47,63,311	3,42,61,201	1,60,313	7,34,224
	America, North	2,36,643	17,70,500	7,47,989	31,43,977
	Amsterdam	2,675	18,750	.....	.....
	Bremen	19,687	1,59,855	.....	.....
	Ceylon	959	7,292	.....	.....
	China	5,906	46,272	.....	.....
	France	6,772	52,943	50	290
	Italy	37	213	.....	.....
	Straits Settlements	99	710	.....	.....
	Suez	6	60	.....	.....
BRITISH INDIAN PORTS.	Trieste	21,215	1,32,769	.....	.....
	Bombay	86,918	5,32,258	.....	.....
	Madras	3,168	24,947	.....	.....
	Pegu	948	7,716	.....	.....

WHITHER EXPORTED.		1872-73.					
		Jute.		Jute Cuttings.		Jute Rejections.	
		Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.
FOREIGN PORTS	United Kingdom	50,40,420	3,35,84,608	2,21,676	6,39,870	1,54,339	5,70,840
	America, North	3,07,718	21,51,684	10,39,953	29,71,400	1,18,942	4,23,105
	Amsterdam	5,357	10,083	.....	.....	.....	.....
	Australia	282	1,921	.....	.....	.....	.....
	Cape	18	324	.....	.....	.....	.....
	Ceylon	1,664	11,803	.....	.....	.....	.....
	China	3,398	20,577	.....	.....	.....	.....
	France	1,37,126	8,20,901	10,715	29,465	635	1,800
	Italy	45	324	.....	.....	8	8
	Straits Settlements	452	3,556	.....	.....	.....	.....
	Trieste	9,139	69,662	.....	.....	.....	.....
BRITISH INDIAN PORTS.	Bombay	1,58,073	8,58,107	.....	.....	.....	.....
	Madras... ..	21,898	1,16,085	.....	.....	.....	.....
	Pegu	13,767	95,980	.....	.....	.....	.....

APPENDIX I.

Statement furnished by the Commissioner of Customs and Opium, Bombay, showing the quantity of Jute exported from Bombay to the United Kingdom during the last ten years, no separate register of exports to individual Ports being kept by the Customs Department.

Years.	Quantity of Jute exported. Cwt.						
1863-64
1864-65
1865-66
1866-67	2,014
1867-68
1868-69	10,491
1869-70	7,719
1870-71	32
1871-72	929
1872-73	17,746

Statement showing the Quantity of Jute (Raw) exported from the Madras Presidency to the several Ports during the last seven years

Years.	United King- dom.	France.	America.	Ceylon.	Bombay	Calcutta.	Total.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
1866-67	214	4,187	.....	21	305	..	5,027
1867-68	.....	.....	.....	.....	.....	.....	.....
1868-69	8	.....	.....	2	.....	.....	10
1869-70	3,453	.....	40	.....	.....	.....	3,493
1870-71	7,899	1,561	.....	291	.....	127	9,851
1871-72	4,763	.....	.....	8	.....	.....	4,771
1872-73	410	.....	.....	.....	..	..	410

APPENDIX J.

Statement of leading prices of Dacca Jute of good qualities only, during the principal three months of the season of previous eighteen years.

MONTHS.	1853.	1854.	1855.	1856.	1857.	1858.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1866.	1867.	1868.	1869.	1870.	1871.	1872.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
September	1 8 0	2 2 5	2 8 0	2 8 0	2 6 6	2 1 0	...	2 12 0	2 14 0	2 14 0	2 14 0	2 14 0	2 14 0	2 14 0	2 6 6	2 10 6	3 3 0	4 2 0	4 3 0	2 4 0
October	1 7 0	2 7 0	2 7 6	2 11 6	2 0 6	2 1 0	2 6 6	2 1 0	2 13 6	2 13 6	2 13 6	2 13 6	2 14 0	2 12 0	2 6 6	2 13 0	3 3 0	4 2 0	4 2 0	2 4 0
November	1 6 5	2 5 0	2 1 0	2 9 5	1 15 9	2 6 6	2 3 0	3 5 0	2 14 0	2 14 0	2 14 0	2 14 0	2 10 6	2 12 6	2 7 0	2 10 6	3 2 0	4 8 0	4 0 0	2 3 0

Statement showing the price of Jute at Scravange for the ten years from 1863 to 1872.

DIFFERENT KINDS OF JUTE.	PRICES IN										REMARKS.
	1863.	1864.	1865.	1866.	1867.	1868.	1869.	1870.	1871.	1872.	
Superior	Rs. A. P. 1 4 6	Rs. A. P. 3 0 0	Rs. A. P. 4 12 0	Rs. A. P. 3 12 0	Rs. A. P. 3 0 0	Rs. A. P. 5 5 0	Rs. A. P. 3 12 0	Rs. A. P. 5 4 0	Rs. A. P. 4 12 0	Rs. A. P. 3 12 0	The prices were not the same throughout the year. The average prices are given in this return.
Medium	Rs. A. P. 3 12 0	Rs. A. P. 2 8 0	Rs. A. P. 2 6 6	Rs. A. P. 3 8 0	Rs. A. P. 2 8 0	Rs. A. P. 3 0 0	Rs. A. P. 3 4 0	Rs. A. P. 4 12 0	Rs. A. P. 3 5 0	Rs. A. P. 3 8 0	
Inferior	Rs. A. P. 3 0 0	Rs. A. P. 2 0 0	Rs. A. P. 3 8 0	Rs. A. P. 5 0 0	Rs. A. P. 2 0 0	Rs. A. P. 2 5 0	Rs. A. P. 2 12 0	Rs. A. P. 4 0 0	Rs. A. P. 3 0 0	Rs. A. P. 3 0 0	

APPENDIX J.—(Continued.)

Statement showing the highest and lowest prices of different kinds of Jute in Calcutta for the years 1865-66 to 1871-72.

Jute from	1865-66.		1866-67.		1867-68.		1868-69.		1869-70.		1870-71.		1871-72.	
	Highest price.	Lowest price.	Highest price.	Lowest price.	Highest price.	Lowest price.	Highest price.	Lowest price.	Highest price.	Lowest price.	Highest price.	Lowest price.	Highest price.	Lowest price.
	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.
Sonjunge ...	3 12 0	3 0 0	3 8 0	3 2 3	3 8 0	3 5 0	3 14 9	3 11 0	4 10 0	5 4 0	3 8 0	5 0 0	3 8 0	3 4 0
Deval ...	5 8 3	4 12 0	3 14 3	3 7 0	3 10 6	3 2 6	4 12 0	4 8 0	4 4 0	4 12 8	3 8 0	4 8 0	3 8 0	2 4 0
Kankripang ...	4 0 0	3 12 0	4 2 8	4 0 3	3 14 0	3 11 8	5 12 0	5 9 3	5 0 0	6 0 0	5 14 0	5 14 0	3 4 0	3 0 0
Kansari char ...	4 2 3	4 0 0	4 4 0	4 2 3	4 0 0	3 14 6	5 14 3	5 2 0	5 0 3	6 0 9	5 13 0	5 13 0	3 5 0	3 2 0
Utariya jute ...	3 12 0	3 4 0	4 0 0	3 8 0	3 12 0	3 3 6	5 4 0	5 0 0	4 12 0	5 12 0	5 4 0	5 4 0	3 14 0	2 10 0
Naringunge ...	3 14 0	3 6 3	3 4 0	3 2 6	3 7 3	3 4 0	3 8 3	3 6 6	4 12 0	4 0 3	3 12 0	3 12 0	3 1 3	3 0 0
Shombhogunge ...	4 4 0	3 13 6	3 8 0	3 3 0	3 12 0	3 7 6	3 10 6	3 8 0	4 10 0	4 10 9	4 8 0	4 8 0	3 6 3	3 4 0
Baharparah ...	4 8 0	4 0 0	3 12 0	3 8 0	3 14 3	3 10 0	4 0 0	3 12 0	5 8 0	4 10 0	4 4 0	4 4 0	3 6 3	3 4 0
Gheor ...	3 4 3	3 0 0	3 10 0	3 0 0	3 6 0	3 0 0	3 7 0	3 4 9	4 10 0	4 4 0	4 0 0	4 0 0	3 0 9	2 12 0
Bolla ...	4 12 0	4 4 0	4 0 0	3 12 0	3 14 0	3 19 3	4 0 3	3 12 0	5 4 0	4 10 0	4 8 0	4 8 0	3 8 0	3 4 0
Deora ...	3 4 0	3 0 0	2 8 0	2 4 0	2 2 3	2 0 0	2 19 3	2 8 0	3 8 0	2 4 0	2 0 0	2 0 0	1 12 9	1 10 0
Pits of other places ...	4 12 0	3 4 8	4 0 0	3 8 0	4 0 0	3 9 3	4 10 9	4 0 0	5 8 0	4 12 0	4 8 0	4 8 0	3 7 3	3 4 0

APPENDIX K.

Statement showing the Principal Jute Marts and Centres in the Bengal Presidency.

Division.	Districts.	Principal Jute Marts and Centres.	REMARKS.
BURDWAN	Burdwan	Burdwan Culina Cuttwa	These are minor marts.
	Bancoorah	Barkura Rajgram Biabonpur Ramasagar	
	Midnapore	Dassagram Hameeruddeen's hat Gange Kolabaria Bhoogaspore Māgālamaro Boodye Dorja Kukurabatty Gaonkhally Babbortalis Ballyghye	
		Dhangadi Tody Babu's Moorasti Ithorda Baharema Bamdeb Shamgungo	
		Chutra Sootraphuli Chootergunge Bhudeesuar Trilani Mogra Habugunge Balgore Sije Bhastara Dhoneykhali	
	Hooghly	Howrah Howrah	
	24-Pergunnahs	Bassirhaut sub-division. Bhadooriah Baraset sub-division. Nyhatty Gouripore Baraset	
		Dum-Dum sub-division. Nya Bazar Pati Pooker Belgatchia Gouripore	
	Naddea	Kocabteah Kumerooly	
	Jessore	Solecupale Binodpur Satrajitpur Bhaban Hati Rajgungo Nowhatta Abeipur Magurah Echukpada Reduansgore Mouirampur	
		Khagra Beldanga Balochur Jeeagunge Bhogowangola Ahtolee or new Bhogowan- gola. Roghunathgunge Dhulian	
		Laharee Joygungo Panora Khanamagunge Dhooshee Kaheroot Roygungo Nya Bander Nowabazar Dinagapore Baloorghat	
	Dinagapore		
PRESIDENCY			
RAJSHAHY			

Division.	Districts.	Principal Jute Marts and Centres.	REMARKS.
RAJSHAHYE.— (Continued.)	Rajshahye	Hamidpore	...
		Kaloparah	...
		Toorukbariah	...
		Pajordangrah	...
		Jeka	...
		Kachooah	...
		Sharabara	...
		Methapore	...
		Dhonparah	...
		Bandikharah	...
		Nundalalee	...
		Nowgoan	...
		Katkhyre	...
		Kalikapore	...
		Togarah	...
		Merat	...
		Doorgapur	...
		Koorajparah	...
		Lukheepore	...
		Sylegachee	...
		Bureedoho	...
		Kalleegunge or Kalkapore	...
		Dosoteonah	...
		Noorulabad	...
		Pershaudpore	...
		Kya	...
		Khoodydanga	...
		Koseyro	...
		Soffy	...
		Dhobyle	...
		Sookteegachee	...
		Khooleekhaloo	...
		Taharpore	...
		Mobungunge	...
		Madnagore	...
		Choonagaree	...
		Nagore	...
		Koojyle	...
		Belgaree	...
		Bhobaneepore	...
		Sahobgunge	...
		Kasheabaree	...
		Nuthoranah	...
		Siugrah	...
RAJSHAHYE.— (Continued.)	Rungpore	Kaligunge	...
		Chitmery	...
		Kamarzani	...
		Belka-Nowabgunge	...
		Sondergunge	...
		Mirgunge	...
		Raneogunge	...
		Bakshigunge	...
		Rothar Bazar	...
		Panch gachi	...
		Jatrapore	...
		Nunkhawa	...
		Kalaghat	...
		Kakena	...
		Bhotmari	...
		Ghoramara	...
		Bangari	...
		Kishoregunge	...
		Gorgram Bhowanigunge	...
	Bogra	Mathrapara	...
		Gurabhangra	...
		Madhupore	...
		Fulhari	...
		Goshainbari	...
		Balughat	...
		Mokamtola	...
		Shonattola	...
		Klangi	...
		Dhunah	...
		Mirzapore	...
		Khanpore	...
	Pubna	Serpore	...
		Garadaha	...
		Shonamukhi	...
		Dnp Chanchia	...
		Hili	...
		Sibgunge	...
		Tilukpore	...
		Pubna	...
		Sajanuggor	...
		Dogaichee	...
		Bhandara	...
		Ekdanta	...
		Chandva	...
		Dhapari	...
		Chatmohor	...
		Bhanguria	...
		Beral	...
		Nakalia	...

Division.	Districts.	Principal Jute Marts and Centres.	Remarks.
Rajshahye.—(Concld.)	Pubna.—(Contd.) { Sernagunge sub-division.	Sernagunge Paugasi Rajgunge Chondrakona Oolapara Kajjuri Kandapore Khamaroolahpore Chowhali	The largest mart in North-Eastern Bengal.
	Darjeeling	Darjeeling	
COOCH BEHAR	Julpigoree	Julpigoree Gopalgunge Domolonee Madargunge Bakaloo Jorepackree Changmaroe Churabhandur Fallakota Boyragyhat Howra Debighunge Nya Debighunge Bhowlagunge Saidangah Boda Berubarree Rajnugger Tatalya Kassimgunge Rajgunge Rancegunge Meonagori Forleachhur Rameshat Halapackree	
	Cooch Behar	Dewangunge Hat Chowrar Lonkotee Jamaldoh	
Dacca	Dacca	Dacca Naraingunge Molozgunge Kahigunge Bhojrub bazar Sabar Ektala Manickgunge Boora Kalipara	The largest mart in Eastern Bengal.
	Furreedpore	Kholabaria Bhanga Madhukhali Coomarkhali Sodpore Boalmari Gopalgunge Goalundo Joynugger Betanguh Poteopore Deora Dignagar (small) Shoreepabad Manicknugger Madhubpore Hat (Paugsha)	
Dacca	Backergunge	Madaripore	The largest mart for the Deora Jute.
	Mymensingh	Nussceerabad Shombhoogunge Boira Dutto bazar Kharaid Kurremgunge Bhojrub bazar Kaliadi Jamalporo Bowshee Banglae Nolita Hari Sherepore Shealkool Sroobunkally Nagorepore Balagunge Chattnok Lakhai Kazir bazar	
	Sylhet		

Division.	Districts.	Principal Jute Marts and Centres.	REMARKS.
CHITTAGONG	Tipperah	Charkalia ... Chur Dasani Mohunpore ... Ramchunderpore ... Sonarampore ... Bholchunga ... Sreoghur ... Churtalla ... Khatoongunge ... Ferangee bazar ... Buksee hat ... Hazary's hat ... Ramdoss Moonahce's hat ... Modon hat ... Reehy's hat ... Nazir's hat ... Narain's hat ... Rumzan Ally's hat ... Fakir's hat ... Roza's hat ... Kamoungo's hat ... Choto Kumar's hat ... Abbootarab's hat ... Ramgopal Mohajan's hat ... Mitserra hat ... Mohasing Dewan's hat ... Poong's hat ... Chundun Tewari's hat ...	
	Chittagong	Revilgunge ... Solempore ... Chupra ... Moharajungunge ... Koeslea ... Kumlea ... Palasmani ... Doolargunge ... Saifgunge ... Bhowanipore ... Doomur ... Baraboi ... Balia ... Purnea (city) ... Hafagunge ... Nowabgunge ... Katukosh ... Amdabad ... Luckhipore ... Araria ... Chakie Culna ... Daria ... Jhaguo Balua ... Sikti ... Hardaha ... Kurnakatta ... Sonapore ... Nowabgunge ... Meorgunge ... Patengnah ... Ranigunge ... Amgachee ... Muzkuri ... Onkhwab ... Salaigardh ... Gunnmatiari ... Panjipara ... Koopadah ... Kiasengunge ... Baligorah ... Kaliagunge ... Khurkhanee ... Panbara ... Goonjuria ... Bahadurgunge ... Sontha ... Kuoti ... Dewangunge ... Sahabgunge ... Ghoradia ... Bachhara ... Athra Chag ... Balishahi ... Balipatna ... Bonomallypore ... Odatabad ... Gopinathpore ... Ronghalo ... Gabalond ... Nagapur ... Balanga ... Kalapathar ... Bhakabari ...	
PATNA	Sarun		
BHARATPORE	Purneah		
MUTTACK	Pooree		

Division.	Districts.	Principal Jute Marts and Centres.	REMARKS.
UTTARAK.—(Contd.)	Pooree.—(Continued.) ...	<ul style="list-style-type: none"> Chhangar Toolaipore Sarkautar Narangada 	
	Balasore	<ul style="list-style-type: none"> Singla hát Sahaje hát Turigaria hát Meyah hát Munsurgunge hát 	
ASSAM AND ADJACENT HILLS.	Goalpara *	<ul style="list-style-type: none"> Patamari Demacurri Goluckgunge Agromony Bishkhowa Sonabandlia Kaliboba Kherbaroe Simlabaroe Koondelaree Protalgunge Gouripore Gossangunge Molakhowa Madarehur 	
		<ul style="list-style-type: none"> Jemadarhat Manikarchur Singcetnaree Decura Mohendrogunge Kakroopara Binnachera Sootakhowa river ghât Pagla river ghât Jingirani river ghât Soota river ghât Berhampootra river ghât Luckimpore Bunder Jemadar hát Dehee Jnyppoor Dehee Nachoony 	

N.B.—The districts in which there are no marts have been omitted from this statement.

Statement showing the Quantity of Manufactured Jute exported f.

WHITES EXPORTED.	1865-66.				1866-67.				1867-68.				1868-69.				1869-70.			
	Gunnies and gunny cloth.		Jute, twine, and rope.		Gunnies and gunny cloth.		Jute, twine, and rope.		Gunnies and gunny cloth.		Jute, twine, and rope.		Gunnies and gunny cloth.		Jute, twine, and rope.		Gunnies and gunny cloth.		Jute, twine, and rope.	
	Pieces.	Value.	Cwt.	Value.	Pieces.	Value.	Cwt.	Value.	Pieces.	Value.	Cwt.	Value.	Pieces.	Value.	Cwt.	Value.	Pieces.	Value.	Cwt.	Value.
United Kingdom	60,540	Rs. 20,376	...	...	75,284	Rs. 40,526	31	24	160,501	Rs. 9,41,779	...	...	78,315	Rs. 2,37,170	...	...	33,158	Rs. 2,67,	...	...
France	...	...	...	...	9,000	...	...	...	146,250	...	...	...	12,062	...	...	...	...	...	...	...
Bremen	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
North America	3,382,540	Rs. 4,84,791	...	...	2,667,350	Rs. 3,81,892	...	...	8,629,053	Rs. 10,03,341	...	...	7,105,460	Rs. 27,55,872	...	...	6,387,047	Rs. 20,87,	...	...
San Francisco	571,212	Rs. 87,062	...	...	665,018	Rs. 71,701	...	...	1,339,212	Rs. 2,03,417	...	...	250,000	Rs. 30,000	...	...	281,000	Rs. 61,	...	...
San Francisco	...	...	...	...	67,500	Rs. 8,187	...	...	...	...	...	...	...	...	...	...	...	...	...	...
West Indies	63,000	Rs. 9,900	...	...	80,000	Rs. 22,300	...	...	32,000	Rs. 9,600	...	...	20,000	Rs. 6,170	...	...	13,200	Rs. 5,	...	...
Constantinople	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Port Natal	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cape of Good-Hope	134,700	Rs. 21,805	...	...	82,200	Rs. 12,775	...	...	106,250	Rs. 18,744	...	...	183,100	Rs. 25,540	...	...	129,000	Rs. 26,	...	...
Zanzibar	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Suez	10,000	Rs. 2,700	...	...	18,000	Rs. 4,800	...	...	11,250	Rs. 3,938	...	...	8,000	Rs. 2,100	...	...	...	...	...	...
Alexandria	20,400	Rs. 5,508	...	...	21,000	Rs. 5,508	...	...	46,250	Rs. 11,133	...	...	28,500	Rs. 7,605	...	...	21	Rs. 147	...	...
Arabian Gulf	400	Rs. 0	...	...	...	...	...	...	2,000	Rs. 540	...	...	3,908	Rs. 1,000	...	...	...	...	...	...
Persian Gulf	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mauritius	35,250	Rs. 5,048	...	...	...	...	...	...	475	Rs. 108	...	...	2,000	Rs. 425	...	...	...	...	...	...
Bourbon	25	Rs. 4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
New South Wales	863,115	Rs. 60,592	271	193	30,070	Rs. 7,839	...	...	856,162	Rs. 1,07,559	...	...	601,075	Rs. 2,30,146	...	...	287,000	Rs. 68,	...	...
Australia, other ports	165,132	Rs. 23,722	...	...	367,112	Rs. 47,250	...	...	...	...	...	...	190,000	Rs. 30,335	...	...	167,225	Rs. 28,	...	...
China	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Straits Settlements	1,146,475	Rs. 2,09,996	1651	1,189	890,775	Rs. 1,31,369	48	330	800,800	Rs. 1,79,060	41	308	878,218	Rs. 1,80,360	2081	1,462	833,288	Rs. 2,14,	...	...
Java	180,000	Rs. 33,550	...	...	58,600	Rs. 12,135	...	...	415,901	Rs. 89,265	...	...	...	...	...	...	221,450	Rs. 51,	...	...
Maldiva and Laccadive Islands	200	Rs. 30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ceylon	299,350	Rs. 72,718	...	...	477,850	Rs. 1,08,480	3	21	400,852	Rs. 1,29,292	43	692	508,550	Rs. 1,07,415	...	...	239,385	Rs. 55,	...	...
Other foreign countries	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Kurrachee	477,070	Rs. 1,48,065	...	...	612,500	Rs. 1,77,678	33	241	165,000	Rs. 58,000	...	...	...	...	...	...	...	...	...	...
Bombay	16,063,191	Rs. 36,40,844	282	1,072	11,966,881	Rs. 23,80,832	806	5,052	20,414,200	Rs. 33,82,707	623	6,374	15,883,505	Rs. 22,36,974	6521	4,111	15,110,220	Rs. 25,56,	...	...
Calcut	500	Rs. 130	...	...	14,200	Rs. 4,800	...	...	4,000	Rs. 600	...	...	10,700	Rs. 2,681	...	...	21,250	Rs. 5,8	...	...
Canton	...	...	...	...	1,000	Rs. 450	...	...	16,700	Rs. 3,137	...	...	11,350	Rs. 2,215	...	...	11,250	Rs. 3,1	...	...
Tollcherry	...	...	...	...	...	...	...	...	5,000	Rs. 1,500	...	...	...	...	...	...	1,500	Rs. 6	...	...
Other ports in Bombay Presidency.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Pondicherry	13,580	Rs. 3,092	...	...	...	...	...	...	4,000	Rs. 1,200	...	...	...	...	...	...	...	...	...	...
Madras	656,900	Rs. 1,41,150	110	1,826	1,117,973	Rs. 2,81,833	133	1,690	1,552,400	Rs. 3,87,484	886	6,247	804,250	Rs. 2,78,542	1231	968	684,004	Rs. 1,76,	...	...
Alipor	100	Rs. 325	...	...	...	...	...	...	100	Rs. 325	...	...	100	Rs. 325	...	...	1,000	Rs. 2	...	...
Budagory	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bhulpatnam	35,000	Rs. 11,500	...	...	196,893	Rs. 38,794	...	...	44,150	Rs. 12,415	...	...	47,400	Rs. 11,100	15	105	20,210	Rs. 4,9	...	...
Cochin	4,450	Rs. 1,072	...	...	7,700	Rs. 455	...	...	63,000	Rs. 22,172	...	...	...	...	...	...	10,450	Rs. 2,7	...	...
Cornuda	20,800	Rs. 6,195	...	...	60,000	Rs. 14,800	...	...	25,800	Rs. 7,543	...	...	115,400	Rs. 30,057	...	...	205,400	Rs. 51,9	...	...
Coringa	...	...	...	...	6,750	Rs. 1,218	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cassipore	5,000	Rs. 1,800	...	...	10,400	Rs. 18,292	...	...	6,000	Rs. 1,900	...	...	...	...	...	...	26,392	Rs. 6,7	...	...
Mandipatnam	300	Rs. 30	...	...	23,750	Rs. 3,518	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mangalore	...	...	...	...	7,000	Rs. 1,970	...	...	14,000	Rs. 2,000	...	...	...	...	...	...	...	...	...	...
Monsurutta	4,000	Rs. 1,378	...	...	6,000	Rs. 750	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Narrakel	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Nigapatnam	...	...	...	...	10,500	Rs. 1,575	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Quilandy	...	...	...	...	10,000	Rs. 1,200	...	...	482,500	Rs. 62,915	7	42	...	...	...	...	...	...	...	...
Other ports in Madras Presidency.	...	...	...	...	4,900	Rs. 730	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Akyab	1,782,334	Rs. 3,93,551	...	...	1,153,850	Rs. 2,60,581	28	137	1,033,600	Rs. 4,47,895	261	186	814,000	Rs. 1,68,681	1091	766	1,680,250	Rs. 3,93,	...	...
Arriant	...	...	...	...	173,500	Rs. 26,025	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bassett	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Monteirin	20,000	Rs. 3,250	...	...	81,510	Rs. 16,075	...	...	198,350	Rs. 30,357	...	...	192,075	Rs. 30,222	...	...	65,000	Rs. 10,8	...	...
Ramco	2,565,400	Rs. 4,23,521	58	783	4,700,800	Rs. 11,38,453	16	84	3,941,500	Rs. 9,82,074	519	3,185	2,274,896	Rs. 5,67,121	6441	6,085	3,084,915	Rs. 7,76,	...	...
Other ports in British Burmah.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total	28,122,523	Rs. 48,27,358	647	6,001	35,030,734	Rs. 63,09,671	1,0831	8,651	41,435,800	Rs. 83,40,346	2,3144	17,358	27,602,085	Rs. 69,41,001	1,7331	12,908	20,378,179	Rs. 68,67,	...	...

Calcutta to each Port during the following years, and its declared value.

[illegible]

APPENDIX M.

Statement showing the Screw-houses and Jute-mills in Calcutta, the Suburbs, and other places.

	Locality.	Dates when they were set up.	REMARKS.
CALCUTTA...	93, Chitpore road	1st August 1872.	
	8, Lal Bazar street... ..	10th ditto 1872.	
	19, Old China Bazar lane	10th ditto 1872.	
	24, Amratolla lane	16th ditto 1872.	
	56 & 57, Strand road	17th ditto 1872.	
	62, Nimtola Ghât street	17th ditto 1872.	
	13, Sukea's lane	17th ditto 1872.	
	43, Strand road	17th ditto 1872.	
	27, Ditto	17th ditto 1872.	
	21, Sukea's lane	20th ditto 1872.	
	18, Amratolla lane	21st ditto 1872.	
	113, Bow Bazar street	22nd ditto 1872.	
	62, Nimtola Ghât street	30th ditto 1872.	
	5, Sukea's lane	2nd September 1872.	
	109, Canning street	2nd ditto 1872.	
	33, Strand road	2nd ditto 1872.	
	145, Chitpore road	2nd ditto 1872.	
	20, Sukea's lane	2nd ditto 1872.	
	78, Kalutolla street	3rd ditto 1872.	
	178, Chitpore road	7th ditto 1872.	
	13, Pollock street	7th ditto 1872.	
	12, Bonfield's lane	7th ditto 1872.	
	7, Grant's lane	9th ditto 1872.	
	309, Bow Bazar street	9th ditto 1872.	
	83, Clive street	9th ditto 1872.	
	11, Jackson's Ghât street	10th ditto 1872.	
	113, Bow Bazar street	14th ditto 1872.	
	14, Old China Bazar street	14th ditto 1872.	
	11 Sukea's lane	14th ditto 1872.	
	98, Clive street	14th ditto 1872.	
	64, Nimtola Ghât street	14th ditto 1872.	
	4, Sukea's lane	14th ditto 1872.	
	28, Clive street	20th ditto 1872.	
	2, Clive row	4th October 1872.	
	12, Pollock street	4th ditto 1872.	
	62, Channan gali	4th ditto 1872.	
	110, Canning street	4th ditto 1872.	
	4, Old China Bazar street... ..	2nd November 1872.	
	20, Tiet's Bazar street	27th ditto 1872.	
	114, Bonfield's lane	2nd April 1873.	
	18, Sukea's lane	2nd ditto 1873.	
SUBURBS OF CAL CUTTA	Cossipore	Unknown.	
	Ditto, Gun-foundry	December 1865.	
	Cali Prasono Sing's road, Chitpore... ..	August 1873.	
	Nowabputty, ditto	April 1873.	
	Guliff's Street, ditto	November 1871.	
	Bullighattha road	December 1860.	
	Cali Prasono Sing's road, Chitpore... ..	Ditto 1859.	
	Ditto, ditto	Ditto 1866.	
	Ditto, ditto	Ditto 1872.	
	Ditto, ditto	Ditto 1871.	
24-PERGUNNAS...	Ditto, ditto	November 1872.	
	Sugar-work lane, Cossipore		Under construction.
	Ram Gopal Ghose's lane, Cossipore		Ditto.
	Cossipore road		Ditto.
	Ditto	January 1871.	
	Chitpore Ghât lane	Ditto 1866.	
	Nowabputty street, Chitpore	July 1872, and January 1873.	
	Barranagore, north of Calcutta	Not known.	
	Frankissen	1855.	
	Gorifa, near Nyhatly	1864.	Jute mills.
HOWRAH	115, Hurrugunge road		Ditto.
	75, Howrah road		
	Do. do.		
	182, Hurrugunge road		
	44, Howrah road		
	11, Old Ghoosery road		
	33, Do. do.		
	75, Do. do.		
	103, Do. do.		5 Hydraulic presses.
	126, Do. do.		
	129, Do. do.		2 Screw-houses.
	130, Do. do.		
	149, Do. do.		2 Ditto.
	141, Do. do.		2 Ditto.
	63, Luceapara lane		
	10, Joya Beber's lane		
	11, Do. do.		
	13, Do. do.		
	5, Khetter Mohun Mitter's lane.		
	97, Golamari road		2 Hydraulic presses.
	5, Koonari lane		
	225, Grand Trunk road		
	227, Do. do.		2 Screw-houses.
	4, Cullen Place do.		Jute mills.

Statement showing the Sereie-houses and Jute-mills in Calcutta, the Suburbs, and other places.—(Continued.)

Locality			Dates when they were set up.		REMARKS.
HOOGHLY	Serampore	...	1st	January 1869.	Jute Mills.
	Rishra	...		1856.	Ditto.
	Dacca	...	1	in 1870.	
	Do.	...	1	in 1871.	
Dacca	Do.	...	2	in 1873.	
	Naraingunge	...	1	in 1867	and 3 others.
	Dacca	...	6	from 1868.	
	Do.	...		1873	Hydraulic press.
PURNA	Serajgunge	...	Unknown		Jute mills.

Note.—There are six Jute Mills:—

1. Barnakore Jute-Mills.
2. Serajgunge Jute ditto
3. Ishera Jute Mills.
4. Serampore Mills.
5. Gouripore Jute Mills
6. Fort Gloder ditto

Three new mills are being erected.

APPENDIX N.

Jute-Culture in the United States.

Experiments in cultivating jute in the Southern States thus far indicate that both the climate and the soil are well adapted to its growth, and there is a fair promise that its production will become an extensive and profitable industry in that section. Its fibre supplies material in manufactures, for which there is a rapidly increasing demand, and which, except to a very limited extent, does not take the place of cotton; while, therefore, it will not supplant the latter, nor compete with it in the market, it may enlarge the area of profitable rural industry in the South. It is claimed that were the South to divide the labor it now bestows exclusively upon cotton between that and jute, the result would be an increase in the value of the cotton crop; it having been proved that beyond certain limits an increase in the product occasions a diminution in the total value; that it supplies the raw material for coarse fabrics, which are now largely imported by the cotton growing States, but which might be manufactured by their unskilled female laborers at a saving of millions; that it can be raised and prepared for market at a greater profit per acre than cotton.

The following communication has been received from Mr. E. H. Derby of Boston, who is an enthusiastic believer in benefits to result to the South, and so to the whole country, from jute culture:

As the jute plant has been acclimated in the Southern States and I have exerted myself to aid in its introduction, many questions have been addressed to me from the South as to the culture and harvesting of the plant. I have consequently written to a friend in India, and subjoin extracts from his reply, which will be useful to the planter if published in your valuable report. I am convinced by this reply and by other letters from the South that the rich lands of Florida, Louisiana, Texas, and Mississippi, will, with fair cultivation, yield 3,500 lbs. or ten bales, of fibre to the acre, in place of one-tenth of that amount of cotton. I am convinced also that it can be produced at less than one-tenth the cost of cotton, that the caterpillar will not touch it, and that if planted around the cotton fields it may possibly protect them from that voracious insect. I am also led by my letters to hope that it will attain to its full growth in three to four months, and that the same field may yield two crops in one season. I have just returned from Scotland, where I visited the jute factories in the flourishing city of Dundee, where the import and manufacture of jute is making wonderful progress.

The subjoined table gives in tons the import and manufacture of jute in that city since 1837:

						Tons.
* In 1838	...	...	...	...	...	1,136
„ 1847	...	...	...	...	...	6,966
„ 1854	...	...	...	...	...	16,590
„ 1872	...	...	...	...	...	96,000

Since 1854 the increase has been about 500 per cent., and in this interval of time the cotton manufacture has not grown at one-fifth of that rate. Some of the jute yarn which I saw at the factories is spun very fine and sold for 8 or 10 cents a pound. It is used for bags and carpets, and some of the latter, handsomely coloured, have sold for 16 cents per square yard. It is also interwoven with silk, linen, and woollen threads into cheap cloths.

By the subjoined extracts you will notice that the jute seed from one acre will suffice to plant fifty acres, and that the plant is usually gathered some weeks before the seed ripens. I suggested this idea last summer to Mr. Chapman of Point Coopee, but presume that most of our planters have this year allowed their seed to ripen, in which case they may have plenty of seed but inferior fibre, and possibly require the ramie machine to separate the fibre from the stalk, and possibly thus make it available for coarse, if not for fine, fabrics. The progress of events convinces me that the jute is just what the South requires to diversify its industry and to fill up the gap when cotton is a failure. With the growing demand for it, jute promises to pay much better than cotton.

I noticed in the jute mill at Dundee that after the jute was sorted a woman placed a layer of it on the floor, then sprinkled it freely, first with water and afterwards with oil; she then placed another layer over that and sprinkled it in the same manner, and so piled up layer upon layer. This sprinkling was before the fibre was spun.

An extract from the reply above mentioned is given, as follows:

The quantity of jute and seed produced to an acre depends greatly on the richness of the land it is planted on. Seragunge, Naraingunge, Dacca, and other north-eastern districts,

where about four-fifths of the total crops are raised, produced from 2,000 to 3,000 pounds of jute on an average; in some cases, however, as much as 4,000 pounds are produced. The yield of seed is about 1,000 to 1,200 pounds per acre. In the country fifty miles around Calcutta, the production of which is called *dessee* or country jute, the yield is smaller, being only about 600 to 1,000 pounds of fibre, and more seed, say 1,500 to 1,600 pounds per acre; but on rich, damp lands the product is almost as much as in the north-eastern provinces.

The *dessee* description was used only for local consumption until about five years ago, when shipments of it to England began, and both the shipments and production of it are increasing every year. Jute is sown broadcast, and about 22 to 28 lbs of seed are required to an acre. In the north-eastern provinces it is planted in February and March, and is cut about the end of June and beginning of July; the *dessee* is sown in July and cut in August and September. On rich land it grows and ripens quicker. In the north-eastern districts, when grown on rich soil, the diameter of the stalk at the bottom is from three-quarters of an inch to one and a quarter inches, and the length from seven to ten feet, and sometimes, but rarely, longer and thicker. The country jute is four to seven feet long and one-half to three quarters of inch in diameter. The plants are cut about three inches above the ground, excepting *dowrah*, which is uprooted. The butts are cut at the time of bailing the jute for export in Calcutta. When the stalks are cut they are covered with a green bark, which, after going through certain processes, becomes fibre. The planters cannot tell at the time of cutting the stalks, whether any, or how far from the bottom, any will be hard. The stalks are cut about a month before the seed ripens, and the poorer plants are generally let go to seed. Jute made out of the plants-producing seed is hard and barky. The unripe seed cut with the stalks is of no use. It grows best on rich, moist ground, but not on low ground. Castor oil cake is the best for it, and next to that cow manure; but the country planters, as the ground is naturally rich, use no manure whatever. An acre of cotton costs much more than an acre of jute. Jute and cotton do not interfere with each other in the least; cotton grows in the North-Western Provinces, Central and Southern India, while jute is raised in Bengal. The little cotton that Bengal produces, and the little jute the cotton districts produce, are of poor quality, and only raised for local consumption. For the last few years jute has been encroaching on the linseed crop, as the same ground is suitable for both.

The statements above answer in part the inquiries in the subjoined communication addressed to this Department by William M. Hazzard of Georgetown, South Carolina:

The cultivation of rice is attended with so many difficulties and risks, and such an outlay of money, with little or no remuneration, that we shall be obliged to abandon our lands or introduce some plant less liable to the disasters to which a rice-crop is exposed. From experiments I have seen made I am satisfied that our lands are well adapted to the growing of jute. This plant, whenever tried in the rice-fields, has grown most luxuriantly. I have thus far failed in my efforts to obtain seed enough to plant three or four acres the coming year. I should be glad to obtain all the information the Department of Agriculture can furnish in reference to the time of planting, mode of cultivation, time for cutting, and mode of curing and preparing for market.

A correspondent at Charleston, South Carolina, reports that he planted jute seed, June 10, on very poor land, and, October 1, the plants had grown to a height of six feet. That it can be raised at the South with success and large profit, he has strong faith.

The following extracts from correspondents give the results of their own experiments in growing it:

Orange County, Florida.—I ploughed up and thoroughly prepared a half acre of medium grade pine-land, and sowed the jute in drills, May 23. It came up well, but owing to the excessively hot, dry weather, it all dried up. On the same day sowed a small plant in a bay-head. It came up and grew finely. I am now gathering the seed. Some of it is 12 feet high, and all as high as I can reach. Sowing that on damp, rich soil it will here succeed finely. This bay-head is muck several feet deep, which I cleared off and limed two years ago. Upon it bananas grow from 12 to 15 feet high.

Muscogee County, Georgia:—I considered the experiment in jute-raising a success. The cultivation is simple and the cost of production small. I had seeds sown broadcast on broad beds; some on sandy river land, and the rest on stiff clay land. The latter did very much better than the former. The cultivation was the same, but many of the plants on the sandy soil died out after having attained their full growth, while those on the clay lands remained green and vigorous, and matured their seed. The plant requires moisture. The seed was sown in May, and the plants could have been cut in September. A frost on the 15th of October, which injured the cotton, did not leave its mark on the jute. It attained the height of 15 feet, and in appearance somewhat resembles a plantation of young peach trees before being removed from the nursery. I had the plants cut in October and steeped ten days in stagnant water, after which the fibre was easily stripped off.

New Orleans, Louisiana.—Jute seed received from the Department of Agriculture was planted on the 13th of April. The soil was well ploughed and harrowed, and in good condition. Patch No. 1, rich soil, 3 feet above ordinary gulf-tide, planted in drills $3\frac{1}{2}$ feet apart;

patch No. 2, very rich soil, one foot above tide, planted in chops 4 feet by 2½; patch No. 3, same as No. 2, planted broadcast; soil very dry at planting. Seed covered one-half inch deep did not germinate until rain on the 22nd of April. May 12.—Passed the cultivator through patches 1 and 2. May 27.—Chopped with hoe the large weeds from the same; jute 2 feet high; no further cultivation. Patch 3 received no attention after planting. Almost continuous drought this summer; jute suffered, but not so much as corn and other crops. July 10.—Cut a portion of patches 1 and 2 nine and ten feet high; put the same in bayou-water for seven days, and got beautiful fibre the entire length of the plant. July 15.—Planted again the land which was cut on the 10th. At this date, October 10, this second crop is 8 feet high, looking well, although it has suffered much from excessive drought. Wishing to save as much seed as possible for a more extended planting the next season, I could afford but a fractional part of an acre on which to arrive at some idea of what amount of fibre we may expect per acre. On the 28th of August I cut a portion of patches 1 and 2, plants measuring from 11 to 13 feet; seed-burs about half grown. (This was in accordance with direction in agricultural report of 1871, page 172). The quantity of fibre saved satisfied me that the yield of these patches would be quite equal to 4,000 pounds per acre.

Patch 3, broadcast, is exceedingly dense and heavy; portions being matted with native weeds, it is impossible to make a reasonably accurate estimate of yield per acre.

Wishing to test the aquatic qualities of jute, I selected patch 2 as liable to overflow by heavy rain. The season being almost entirely without rain, I transplanted some of my July planting, when 2½ feet high, into water several inches deep. The plants have continued to grow finely, and are now looking well; this in a continuous flood of water for several weeks.

The above correspondent (F. W. Johnstone) states:—"The seed we are now gathering appears larger than that planted—evidently improved. It takes just 600 of the Calcutta seeds to equal in weight 500 of the Louisiana." But it is quite probable that when the newly gathered seed is thoroughly dry it will lose this excess in size and weight. Under date of October 22 he forwarded to the department three samples of jute-fibre, with a report, of which the following is an abstract: sample No. 1 was cut four and half months from sowing, when the most forward seeds were half ripe; No. 2 three months from sowing, when the first blooms appeared. This he thinks the best time, as at that stage female labour can do the cutting, and there being then only one quality of fibre, the expense of slow and tedious assorting and of cutting butts is avoided. No. 3 was from the second crop, planted July 15, and cut two months later. He further reports:

Some of the July planting, second crop, is now fully matured for fibre; some planted the first week in August will make a full crop, unless the frost is unusually early. Inquiries from South Carolina to California are being made of me for seed for next season. I have none to spare. Mr. Chapman, of Red River Landing, is asking \$5 per pound. He has two varieties, the pod-bearing and the bur-bearing seed. The pod-bearing variety he thinks much superior to the other. This he got, I think, three years ago, from the Department of Agriculture. The seed the department sent out last spring was exclusively the bur-bearing, which is brown in color, while the pod-bearing is green. I have some plants which have been flooded constantly for two months now seeding in six inches of water.

Charleston, South Carolina.—I have done what I could to encourage experiments with jute, and have distributed hundreds of packages of seed raised by myself. Experiments have been in the highest degree encouraging. The plant seems to flourish quite as well as in India.

Mr. H. H. Stevens, of Webster, Worcester County, Massachusetts, a manufacturer of jute imported from India, to whom this department sent a sample of that grown in Louisiana for examination, reports that in length, strength, and color, it is fully equal to India jute. He adds:

The department should do all in its power, and, if necessary, ask of Congress more power and more money, to extend the culture of this fibre in the country. Twenty-seven years ago in Dundee, Scotland, the question was whether there was any value in jute. To-day, of an export from Calcutta of nearly, if not quite, 3,000,000 bales per annum, Dundee consumes a large share.

The department has received from gentlemen in Louisiana and Georgia very encouraging accounts of their experiments, together, with specimens of the jute fibre which they have produced. Mr. Thomas H. Dunham, of Boston, to whom a sample was forwarded, writes as follows:

The quality is very superior. The market is just now depressed very much. Some parties here have lost heavily on imported jute-butts, and this season (before the fire) India goods were imported at immense loss. The present rate is 6 to 8 cents a pound (gold); the usual rate 10 to 13 cents (gold). Your sample is very superior, and at 10 cents (gold) it would be safe to quote.

You will understand that our merchants do not favor home growth of jute, or rather make light of it; but my advice to you is leave no step possible to push the jute growth;

make every effort to get it raised here. Beyond and above all obstacles push it on. The country will sustain this to any extent. The motive is greater than you can have any idea of. The moment you get the growth started, you will be fully assured, as capital will follow quickly, as in cotton.

Suppose it were a new growth of cotton, no one would doubt the success, or the aid needed. Our growth of jute will nearly equal half the cotton crops. We can cut off India supplies, as we have done in cotton.

The interests of our merchants are so interwoven with India importations that they will (as they do) say "You will never get any quantity grown," and make light of it. But your sample shows that its cultivation is feasible, and it must pay when the market changes. All orders to India are stopped now, and the revulsion will bring jute higher here, within the next year, than it has ever been.

APPENDIX O.

To

THE

UNDER instructions received from His Honor the Lieutenant-Governor of Bengal, and contained in His Honor's Resolution on the Jute Trade of Bengal dated February 4th, we beg to wait on you with the following memorandum explanatory of what the jute plant is, as also with the questions we shall be glad if you will answer respecting the cultivation, &c., of the plant in your district. The fibre known as jute is produced from a plant or plants belonging to the natural order of Tiliaceæ (Limes or Lindens) of which there are between three hundred and fifty and four hundred known species; amongst these the *Corchorus*, a plant of which different kinds seem to be indigenous to many parts of the world; it is chiefly, however, a tropical plant, and, as far as we can at present ascertain, the descriptions which are found in Bengal are *Corchorus capsularis* and *Corchorus olitorius*, and from one, if not both, of these the textile material called jute is produced. The leaves of the *Corchorus olitorius*, if not of both descriptions, are also used as a pot-herb and known in Syria and Egypt, where the plant is cultivated as a vegetable, as Jew's mallow.

Both the above-named species resemble each other, and their description is as follows:—

Annual plants growing ten to twelve feet in height with a straight cylindrical stem about as thick as a man's little finger, seldom branching until near the top.

Leaves of a lively green color, and smooth, alternate on foot stalks, oval or ovanceolate in shape, margins serrated with the two lower serratures terminating in narrow filatures. The flowers are small and yellow, the calyx consisting of five pieces or sepals and the corolla of five yellow petals. The flower-stalks are one or two flowered.

The chief distinction between the two above-named species lies in the seed-pods or capsules, which, of the *C. capsularis*, are short and globose, whereas of the *C. olitorius* they are long and nearly cylindrical.

We are not, however, by any means satisfied that only two descriptions of *Corchorus* are grown and produce jute in Bengal, but to ascertain this for certain it will be necessary to wait until the new crop has grown. There are other fibre-yielding plants which are confounded with, or, at any rate, of which the fibre is sold amongst, and called jute. We can of our own experience mention three, *Mesta*, *Metter*, and *Rajnat* or wild fibre. These are no doubt plants belonging to the "Malvaceæ." As far as we can ascertain, the *Mesta* is the Bengallæ name for the "*Hibiscus Cannabinus*," of which the description is as follows:—Stem prickly, six to eight feet in height, deeply-parted leaves somewhat resembling those of hemp. Flowers, pale yellow with a dark purple blotch at the bottom of each petal. A plant more like jute than hemp, and sometimes called *Bastard Jute*. Leaves are eaten as a pot-herb.

Of the others we can ascertain nothing at present. We may also mention the *Sunn hemp*; although this fibre is sold, we believe, quite distinctly from jute, the plant is, as far as we can learn, the *Crotalaria Juncea*.

The native names by which jute is generally known in Bengal are *pat* and *koshla*.

We now wait on you with sundry questions, and we shall feel obliged if you will furnish us with the information asked for at your earliest convenience.

1st.—State the approximate amount of arable land in your district, as nearly as you can estimate it.

2nd.—The proportion of arable land under jute in your district during seasons 1872 and 1873. Has the cultivation of the plant increased or decreased of late, and why? Specify the tracts in which most jute is grown and their character.

3rd.—Mode of jute cultivation, preparation of the ground, at what time is the seed sown, and at what time is the crop cut.

4th.—Cost of production in detail.

5th.—Outturn per biggah.

6th.—The description of soil best suited for the growth of the plant in your district. Is the quality of the jute deteriorating from the present system of cultivation, and do you consider that the cultivators have been reckless in selecting the land on which to grow the plant?

7th.—State the rotation of crops practised in your district with reference to the cultivation of jute.

8th.—Give all information that you can regarding plants grown in your district, the fibre of which is confounded with or sold as jute.

9th.—The effect on the growth of the plant of excessive rain, or floods, as also of drought, and what sort of season is best suited for its cultivation.

10th.—How long has jute cultivation been carried on in your district to any extent, and to what extent has it increased, or otherwise, year by year.

11th.—How is the present cultivation of jute affecting the country and population, and its effect on the production of the necessary amount of cereals, &c.

How is soil affected by jute cultivation, and do the growers manure the land, and how, or do they employ any other means of renovating it?

12th.—Mode of preparing jute for the market from the time it is cut, and can you suggest improvement on the present system?

13th.—How is the jute transported from your district, and to what mart or marts taken? State the cost of such transportation.

14th.—The amount exported from your district last season and estimated amount this year.

15th.—Through how many and what hands does the jute pass?

16th.—By what class of ryots is jute cultivated, and the proportion of the population employed in its cultivation?

17th.—State the average price of rice in your district in 1869, 1870, 1871, 1872 and at the present time.

18th.—What are the different native names by which jute is known in your district?

19th.—Collect and forward a fair sample of the different qualities of jute grown in your district, as also of other fibres sold as jute or otherwise.

HAMILTON ANSTRUTHER,

H. M. CHUNDER KERR,

*On special duty to inquire into the
production of, and trade in, Jute.*

CALCUTTA, 27, DALHOUSIE SQUARE,

The 11th February 1873.

The following questions put by the Commission were circulated with Government Circular No. 25, dated 9th June 1873, amongst Divisional and District Officers, with a view of eliciting information as regards the manufacture of jute:—

- (1) The place or places where jute is used in manufactures by the natives to any extent.
- (2) The description of manufactures.
- (3) The average quantity of jute used annually in each place, and the description.
- (4) Are the manufactures for local use only, or for export.
- (5) If the manufacture be gunny-bags, state their average size and weight, and the approximate number manufactured in each place.

The following questions were circulated by the Commission, through the Government, amongst Divisional and District Officers regarding the plants, the fibres of which can be used in the manufacture of paper:—

The local names by which the plants yielding indigenous fibres for paper, as far as could be ascertained, are given below, together with a popular description of the plants so that they may be identified with little or no difficulty. If there be any other names current for these or any of these plants, be good enough to mention them.

Abelmoschus esculentus.—B. চুঁচু (Dhenros), H. রামতুরাই (Ramturai).—Common in Bengal, grown as edible. Annual, herbaceous; stems hairy, leaves alternate, cordate, strongly toothed, three to five-lobed, scabrous on both sides, on long petioles; calyx spathaceous, very soft, involucre of ten leaves; deciduous; pedicels short, capsule pyramidal, furrowed, bristly; petals, pale yellow, dark crimson at the base. Flowers all the year.

Abutilon indicum.—B. চন্দ্রিকা (Potaree).—Grows in Bengal; shrub 2-3 feet, leaves cordate, somewhat lobed, soft, shortly tomentose; unequally toothed; calyx, five-cleft, without an involucre; pedicels erect, axillary, longer than the petioles, jointed near flowers; corolla spreading; capsules truncated; carpels 11-20 acute, not awned, hairy; flowers longish, orange-coloured. Flowers in July.

Hibiscus cannabinus.—B. মেস্তা পাট (Mesta pat).—Grows in Bengal; stem, herbaceous, prickly leaves palmately five-partite, glabrous; segments narrow lanceolate, acuminate, serrated; flowers almost sessile; axillary solitary; leaves of the involucre about 9, subulate, prickly, with rigid bristles, shorter than the undivided portion of the calyx; flowers, pale sulphur, with a deep purple centre; seeds few; glabrous; fruit nearly globose. Flowers in June, July.

Adansonia Digitata (Baobab) is not known to grow in Bengal; tree of moderate height; trunk enormous, 30-40 feet in circumference; leaves digitate, quinate, glabrous, petioled; leaflets elliptical, slightly acuminate; petioles and peduncles pubescent; calyx, five-partite, pubescent, silky inside; petals five, spreading, at length deflexed; flowers axillary, solitary, on long pedicels, stamen-tube adhering to the base of the petals; fruit, a large oblong downy pericarp; seeds large, white, with purplish anthers.

Crotalaria juncea.—B. ধান (Sunn).—Grows in Bengal, small plant, 4-8 feet erect, branched more or less, clothed with shining silky hairs; branches terete, striated; stipules, and bracts setaceous; leaves from narrow linear to ovate, lanceolate, acute; calyx, deeply five-cleft, densely covered with rusty tomentum. Flowers distant; legumes sessile, oblong, broader upwards, about twice the length of the calyx, tomentose and many-seeded; flowers yellow. Flowers in November and January.

Crotalaria tenuifolia (Jubbulpore hemp), B. জুব্বলপুরী সন (Jubbulpore sunn), is not known to grow largely in Bengal; perennial, ramous, straight, furrowed, hoary; leaves linear, sericeous underneath; stipules minute, subulate; racemes terminal; legumes sessile, clavate, many-seeded.

Calotropis gigantea.—B. অকান্দা (Akanda), H. মুদার (Muddar).—Common in Bengal: shrub 6-10 feet; leaves stem-clasping, decussate, oblong, ovate, wedge-shaped, bearded on the upper side at the base, smooth on the upper surface, clothed with woolly down on the underside; segments of corolla reflexed, with revolute edges, stameneous; corona five-leaved, shorter than the *gynostegium*; leaflets keel-formed, circinnately recovered at the base, incurved and subtridentate at the apex; umbels sometimes compound, surrounded by involucreal scales; follicles ventricose, smooth; seeds comose; flowers rose-color and purple mixed. Flowers all the year.

Demia elatensis.—B. চাগলবুন্টী (Chhagalbunttee).—Grows in Bengal; turning, shrubby; leaves roundish, cordate, acuminate, acute, auricled at the base, downy, glaucous beneath, stameneous; corona double, outer one ten-parted, inner one five-leaved; peduncles and pedicels elongated, filiform; margins of corolla ciliated; flowers in umbels, pale green, purplish inside; follicles ramentaceous. Flowers in July to December.

Daphne cannabina is not known to grow in the plains of Bengal. Shrub 5-6 feet; branches ascending; leaves ovate, lanceolate, quite entire, smooth, umbels axillary towards the ends of the branches; corolla salver-shaped, with a long tube; segments minute, ovate; filaments in two rows within the tube; berry ovate, red; flowers yellow. Flowers in January and February.

Cannabis sativa.—B. গাজী (Ganja).—Grows in Bengal, specially Rajshahye and Orissa. Annual; plant 4 to 6 feet, covered all over with an extremely fine rough pubescence; stem erect, branched, green, angular; calyx, five-parted; leaves, alternate or opposite on long petioles, digitate with linear lanceolate sharply serrated leaflets, tapering to a long smooth point, flowers in spikes, axillary, clustered, small, greenish-white; males, lax and drooping; females erect, leafy at the base; flowers all the year.

Girardinia heterophylla is not known to grow in the plains of Bengal. Annual, erect; leaves alternato, long-petioled, covered with stringing hairs; flowers small, green. Flowers in September and November.

A ferocious-looking plant; if incautiously touched, this nettle will produce temporarily a most stinging pain.

Bohmeria nivea (*Rheea kunkhoora*).—Grown in Assam, Rungpore, and Dinagepore. Flowers small, greenish-yellow; flowers in October and November; bark abounding in fibres of very great strength and fineness. To procure them the young shoots are cut down, dried, and beaten, after which the rind is stripped off.

Antiaris succidora is not known to grow in the plains of Bengal. Large tree; leaves alternato, ovate, oblong, acuminate, entire glabrous above, slightly villous beneath; capitule

axillary, aggregated; drupe, shape and size of a small fig covered with purple down. Flowers in October.

Cocos nucifera.—B. নারিকেল (Narrikael).—Common in Bengal. Spathe axillary, cylindric, oblong, terete, bursting longitudinally; spadix erect or nearly so, winding; male, flowers numerous, approximate sessile above the female; calyx, three-sepalled; leaflets, minute, broadly cordate, fleshy; petals three; female flowers usually one (occasionally wanting) near the base of each ramification of the spadix; corolla six-petalled.

Borassus flabelliformis.—B. তাল (Tala).—Common in Bengal; trunk 30 to 40 feet, everywhere marked with old cicatrices of fallen leaves; fronds composed of several folded linear lanceolate divisions united as far as the centre; flowers male and female on different trees; drupe, sub-globular, flattened at the apex, filled with soft yellow pulp; seeds three; perforated at the apex.

Areca catechu.—B. সূপারি, গুহা (Sooari, gooah).—Common in Bengal. Palm; spathe double spadix, much broadened; male flowers numerous, above the female, sessile; calyx, one-lobed, three cornered, three-partite; petals three, oblong smooth; stamens two-partite, inserted round the base of the style; female flowers one to three at the base of each ramification, sessile; calyx, five-lobed; flowers small, white, fragrant. Flowers in April and May.

Pandanus odoratissimus.—B. কেতুড়ী, কেতু (Keora, ketuckee).—Common in Bengal, specially in the Sunderbuns; large shrub, ten feet or more, bushy; roots issuing from lower parts of the stem or large branches; leaves confluent, stem clasping, closely imbricated in three spiral rows round the extremities of the branches tapering to a fine triangular point, smooth, shining, margin and back armed with sharp spines, those on the margin points towards the apex; three below in various ways; flowers male and female in terminal racemes on different plants; in female flowers no other corolla or calyx than the termination of the three rows of leaves forming three imbricated fascicles of white floral leaves, standing at equal distance round the base of the young fruits; fruit something in appearance like a pineapple, orange-colored, composed of numerous drupes detached when ripe and covered with a deeper orange-colored skin, interior filled with rich-looking yellow pulp, intermixed with strong fibres; seed oblong, smooth; flowers small, fragrant. Flowers in rainy season.

Sonneratia zaplanica.—B. মূরী (Moorya), বোরাকুর (Borachucker).—Grows in Bengal. Stemless; roots perennial; leaves radical, exterior ones shorter, spreading, and more broad; interior ones nearly erect 1 to 4 feet long, semi-cylindric, grooved on the upper side, sharply acuminate at the apex, somewhat striated, smooth; scapes rising from the centre of the leaves, 1 to 2 feet long, erect, with four to five alternate sheaths between the raceme or flower-bearing part and the base; racemes erect, about as long or longer than the scape below the flowers, striated; smooth, flowers greenish-white; erect, fascicled, 4 to 5 together; pedicels short, one-flowered; corolla one-petalled, funnel-shaped; calyx none. Flowers in August and September.

Yucca gloriosa.—B. ল্যাণ্টান ফ্লোরিং-ট্রি (Lanthana flower-tree).—Common in Bengal. Conspicuous for their noble show of lily-like white flowers, as well as for their long sword-shaped leaves, terminated by a thorny point.

Musa paradisiaca.—B. কলা, বম্বা, কাঁচালা, কদলি (Kala, rombha, kanchkala, kadali).—Very common in Bengal. Herbaceous; stem, simple, thickly clothed with the sheathing petioles of the leaves; leaves forming a tuft on the apex of the stem; each division enclosed in a large spathe with male flowers at the base, female or hermaphrodite ones at the upper end; perianth with six superior divisions, five of which are grown together into a tube slit at the back, the sixth is small and concave; style short; fruit oblong, fleshy, obscurely three to five-cornered, with numerous seeds buried in pulp; flowers yellowish-whitish. Flowers all the year.

Musa textilis is not known to grow in Bengal. Description almost the same as *Musa paradisiaca*.

Agave Americana.—B. কানোড, কোঙ্গা (Kanor, konga).—Grows in Bengal; stems cylindrical, woody; leaves about six feet long, bluish green, ending in sharp spines; flowers, greenish yellow.

Bromelia ananas.—B. আনারস (Anaros).—Common in Bengal. Perennial; two to three feet; leaves ciliate with specious points; calyx three-parted petals, three spikes; tufted; flowers small, bluish. Flowers in April and May.

Corchorus olitorius.—B. পাট, বন-পাট, কোষ্ঠা (Pât, bon-pat, koshta).—Very common in Lower Bengal; annual; five to six feet erect; leaves alternate, ovate, acuminate, serrated, the two lower serratures terminated by a slender filament; peduncles 1-2 flowered; calyx five-sepalled; petals five; capsules nearly cylindrical, ten-ribbed, five-celled, five-valved; seeds numerous, with nearly perfect transverse septa; flowers, small, yellow.

Corchorus capsularis.—B. ঘি নালিতা পাট, নালিতা, পাট, তিউ পাট, পাট, কোষ্ঠা (Ghee nglita pâ, nalitapât, toeta pâ, pâ, koshta).—Very common in Lower Bengal; annual; five to ten feet; calyx deeply five-cleft; petals five; leaves alternate, oblong, acuminate, serrated, two lower serratures terminating in narrow filaments; peduncles short; flowers whitish yellow.

in clusters opposite the leaves; capsules globose, truncated; wrinkled and maricated, five-celled; seeds few in each cell, without transverse partitions; in addition to the five-partite cells, there are other five alternative, smaller and empty

Saccharum munja.—B. মুন্যা (Shor), H. মুন্জা (Munja).—Grown in Bengal. Culms straight, eight to twelve feet, smooth; leaves channelled, long, linear, white-nerved, hispid at the base inside; panicles large, oblong, spreading; ramifications verticelled; flowers hermaphrodite; corolla two-valved.

Flax.—B. মশনা (Moshina), H. তিসি (Tishi).—Grown in Bengal. Annual; erect, glabrous; leaves alternate, lanceolate or linear, acute, entire, panicles corymbose; sepals ovate, acute or mucronate, with scarious or membranaceous margins; petals slightly crenated, three times larger than the calyx; stamens alternate with the petals, having their filaments united together near their basis; capsule roundish pointed at the apex, five-celled, each cell divided into two partitions containing a single seed; seed oval, smooth, brown or white, mucilaginous outside with oily and farinaceous kernels; flowers blue. Flowers in December and February.

Rice straw.—B. বিচক্ষা, খড় (Beechhalce, Khor).—So very common in Bengal, and so well known to the peoples that it needs no description.

Bamboos.—B. বাঁশ (Bans).—Very common in Bengal, and well known to the people. Needs no description.

Refuse of the Sugarcane.—B. ইক্ষুর শিটে, ইক্ষু চিড়ে (Ikhoos shitee, Ikhoos chhibray).—Very common in Bengal; no description is needed.

2. Mention the cost of cultivation of all or such of these plants as are grown in your district, and the yield per acre, and also the cost of bringing the same to Calcutta either by country boat or steamers and rail.

3. Inquire and communicate the price at which these or any of these fibres are bought and sold, and the mode of buying and selling the same. Describe the soil generally selected for the cultivation of these plants, as also whether there is room for the extension of their cultivation. Describe also the mode of preparing the fibre.

4. Is there any export trade in any of these fibres in your district? If so, please name the places where they are sent.

5. Is paper manufactured in your district? If so, please mention the material of which it is made and the process and cost of making it, forwarding samples of the different kinds of paper manufactured, together with a memorandum of price at which it is sold. State the amount of fibre annually used in your district in the manufacture of paper, and the quantity of paper made, as nearly as you can estimate it.

6. Please note whether there are any other plants the fibres of which can be manufactured into paper.

7. Although coconut palm and plantain trees, as also sugarcane and paddy plants, are grown extensively in almost every part of Bengal, we presume they are never employed in the manufacture of fibres. Do you think if the people were told that very useful fibres could be prepared from them, they would (with or without aid and encouragement) come forward to undertake the preparation of fibres from such plants for use or trade? As also, whether, under similar circumstances, they would undertake the cultivation of any of the plants named in the Government of India's letter No. 1—129 of the 26th June last, which is now not grown in your district.

8. Collect and forward samples of the fibres mentioned in Government letter above alluded to.

N. B.—Information as regards the price, export, &c, of jute need not be given, as I have already got it.

APPENDIX P.

Statement showing the export of Jute during the year 1872-73 from the undermentioned districts.

Name of District.						Exports in maunds.
Rangpoore	..	..	..	..	..	2,258,508
Mymensing	..	..	..	..	..	1,850,000
Dacca	..	..	..	..	..	1,160,411
Tipperah	..	..	..	..	..	1,000,000
Biogra	..	..	..	..	..	860,284
Buckergunge	..	..	..	..	..	450,000
Furcedpore	..	..	..	..	..	220,000
Purneah	..	..	..	..	..	200,000
Jessore	..	..	..	..	..	160,000
Goulpara	..	..	..	..	..	150,000
Rajshahye	..	..	..	..	..	150,000
Baraset (24 Pergunnahs)	..	..	..	..	..	100,816
Lohardugga	..	..	..	..	..	47,500
Culna (Burdwan)	..	..	..	..	..	15,000
Sylhet	..	..	..	..	..	9,000
Noakhally	..	..	..	..	..	6,817
Alipore (24 Pergunnahs)	..	..	..	..	..	5,000
Malda	..	..	..	..	..	5,000
Balasore	..	..	..	..	..	2,500

